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SATURDAY JANUARY 26 1952

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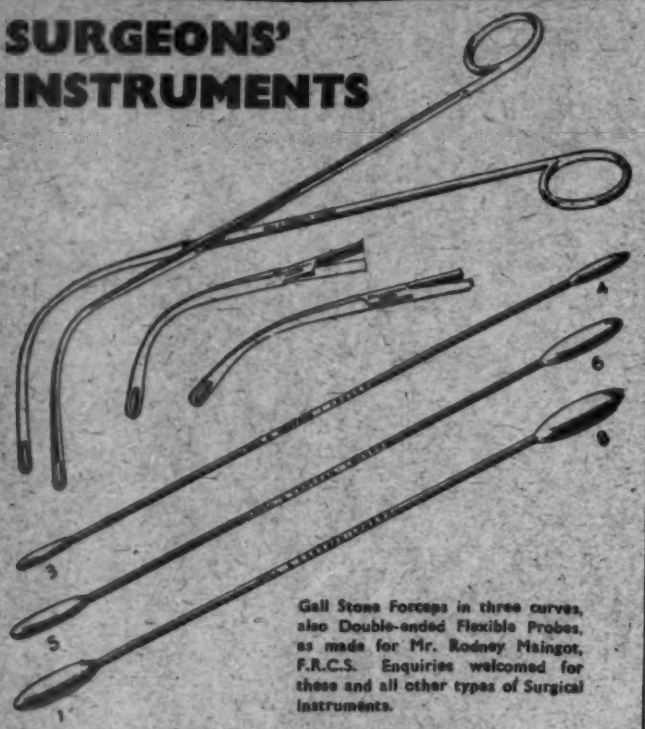

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY JANUARY 26 1952

INAUGURAL LANGDON-BROWN LECTURE*

BY

The Late GEOFFREY EVANS, M.D., F.R.C.P.

We are assembled this afternoon to honour the memory of Sir Walter Langdon-Brown, and I will do my best to place on record something at least of the contribution he made to medical science and human understanding. I am very grateful to the President and Board of Censors for the honour of being appointed to give this Inaugural Lecture.

Bedford Days

Walter Langdon-Brown was born on August 13, 1870, in the old manse, Bedford, the eldest son of the Reverend Dr. John Brown, who was the sixth direct successor of John Bunyan in the pastorate of Bunyan Meeting, Bedford, and the author of the standard biography of Bunyan. He entered Bedford School in 1879 and there he showed himself very earnest in his work and keenly curious to know. Although a poor classical scholar judged by the school standard of those days, he won the prize for English essay each year, an achievement which confounded his masters, who held that the ability to write good English depended on a knowledge of the classics. By the age of 15 he had developed an enthusiasm for English literature, and two years later he was promoted top of the form. At the age of 18 he won a leaving scholarship and so ended his school days with credit.

His home life was a happy one. His father concerned himself with his schooling and took his son to Bedford School when he went there for the first time for his entrance examination. The boy admired his father; he realized that the headmaster of his school, Dr. J. S. Phillpotts, and his father were the intellectual leaders of the town. His mother was the deciding influence in his career in these early days. She seems to have been somewhat reserved, very firm in character, and puritanic in outlook—using the term "puritanic" in the sense of being extremely strict in morals. Mrs. Brown had complete faith in her eldest son; she watched his every step and did her best to guide him in the path of goodness. But he wanted more than this, an expressed affection, and he found in his sister Florence, later Mrs. J. N. Keynes, who was nine years older than himself and whom he adored, and to whom, to use his own words, he remained devoted throughout his life. With his brothers, Harold and Kenneth, he was lifelong friends. He was strong and constant in affection.

*Read, owing to the death of Dr. Evans on August 30, by the President of the Royal College of Physicians of London at the College on October 30, 1951.

Cambridge Days

Langdon-Brown entered St. John's College, Cambridge, with a junior scholarship in 1889. He arrived unsure of himself and diffident, but he soon made friends and became engrossed in his work. In his third year he found himself. He was by nature ambitious; his teachers gave him the encouragement and appreciation which were his greatest need at that time, and now he became conscious of a firmer grip on things and felt he was beginning to approach the first-class academic standard.

He has left us a beautiful vignette of an occasion in his life at St. John's College. "We take our places in hall along the long Jacobean benches at the equally long and ancient tables. The bell rings in the turret. The butler hands the Latin grace to the scholar of the week as he advances to the dais. We rise; the bell ceases; silence. 'Benedic, Domine, nos et dona tua,' he begins, 'Bless us, O Lord, and these thy gifts.' So has the grace run these four hundred years since the Lady Margaret, whose portrait hangs in the place of honour, founded the College. So it ran in the days when the great men whose portraits adorn the walls were undergraduates, became distinguished, died, and faded into memories more or less distinct. So it will run when we in our turn give place to others. What a deep sense of continuity it gives; of life that transcends the individual."

Langdon-Brown completed his career at Cambridge with distinction by gaining a first-class in both parts of the Natural Sciences Tripos. Subsequently he maintained the high standard which he had set himself by being bracketed first in surgery and midwifery and in being second in medicine in the third M.B. examination: later he was awarded the Horton-Smith Prize for the best thesis for the degree of M.D., University of Cambridge.

St. Bartholomew's Hospital

When Langdon-Brown delivered the Annual Harveian Oration in this College on October 19, 1936, he chose for his subject "The Background to Harvey." And so it is in keeping with his own approach to biography to speak about his background at St. Bartholomew's Hospital, more particularly in respect of its atmosphere of learning, to which he himself so greatly contributed.

Robert Bridges, later Poet Laureate, had left the hospital in 1881, 13 years before Langdon-Brown came

to St. Bartholomew's. It is appropriate, however, to mention his name, because Langdon-Brown was enthralled by his great work, *The Testament of Beauty*, and he chose "Robert Bridges: The Poet of Evolution," as the theme for his inaugural address to the Abernethian Society on November 3, 1931.

Langdon-Brown entered St. Bartholomew's Hospital in 1894 with the senior open entrance scholarship. In the same year Sir James Paget gave the inaugural address at the 100th session of the Abernethian Society. After qualification in 1896 he was appointed house-physician to Dr. Samuel Gee, a man of remarkable talent, whose mind was cast in the same mould as that of the seventeenth-century philosopher Thomas Hobbes, whose works he often quoted. This was the age of materialism at Bart's; reason disputed empiricism, and logic prepared the ground for the incursion of science into medicine. Norman Moore was assistant physician, later full physician, and, finally, President of this College during the years of Langdon-Brown's life at St. Bartholomew's Hospital. In addition to his knowledge of biology and natural history, Norman Moore was a scholar of Irish Gaelic. In those days the notes of a patient's case were pinned on a board which was hung on the wall at the head of the bed for everyone to see, and Norman Moore would sometimes write a very private note on the patient in the ancient language of Erse, or a less private record was made in Latin, such as the diagnosis "valetudo conquassata" (literally translated, "health severely shattered"), meaning much the same as anxiety neurosis or battle fatigue. But his name in the future will be remembered by his *History of the Study of Medicine* in the British Isles, and by his editing of the Middle English translation of *Liber Fundacionis*, a work composed by an Augustinian canon in the Priory of St. Bartholomew in West Smithfield in the reign of King Henry II; and especially will he be remembered by his great history of St. Bartholomew's Hospital.

This literary tradition was carried on by Langdon-Brown's contemporaries. Sir D'Arcy Power shared Sir Norman Moore's interest in historical research in his Life of William Harvey, published in 1897, while another of his colleagues, Sir Percival Horton-Smith Hartley, in conjunction with Harold Aldridge, has written the Life of Johannes de Mirfeld, who was one of the Clerks of the Priory of St. Bartholomew in Smithfield in the latter half of the fourteenth century, when Richard II was king. The latest contribution to historical research emanating from the hospital is a collection of *Essays in the History of Medicine* by the late George Gask, and no doubt Langdon-Brown heard some of these lectures delivered.

Sir Archibald Garrod introduced biochemistry to clinical medicine. He walked to and fro between his wards and Dr. Hurtley's chemical laboratory: to Garrod the wards and laboratory were as much one as the two sides of a penny. He was elected a Fellow of the Royal Society in recognition of his work on urinary pigment and his discovery and description of *Inborn Errors of Metabolism*, which was first published in book form in 1909; the second edition was published in 1923, when he was regius professor of medicine in the University of Oxford. Administrative capacity was represented by Sir Wilmot Herringham and by Sir Holburt Waring, who is still with us, both of whom in their time were vice-chancellors of the University of London. Herringham was a great orator; Waring was in the forefront of surgical practice.

Langdon-Brown had a wide education in clinical medicine. He served as clinical assistant in the department of diseases of the ear, nose, and throat, and then as external midwifery assistant. When he had completed his term as house-physician to Dr. Gee he became senior resident medical officer to the Metropolitan Hospital; two years later, in 1900, he was appointed assistant physician and pathologist to that hospital, and in 1906 became full physician. Meanwhile his progress at St. Bartholomew's Hospital was slow, but it provided him with ample opportunity for learning and clinical experience, first as casualty physician in 1900, then as junior demonstrator of practical medicine three years later, and, again three years later, he was appointed medical registrar and demonstrator of morbid anatomy. It was not until 1913, at the age of 43, that he was elected assistant physician to St. Bartholomew's Hospital. It was a long and arduous climb to the Staff at Bart's in those days. He became full physician in 1924 at the age of 54. Meanwhile he had already made his name and fame by his work on war nephritis, undertaken at the request of the Medical Research Council and the Director-General of the Army Medical Service in 1915, and his Croonian Lectures, delivered in this College in 1918. That his name was known outside this island of ours is shown by his having been invited to lecture at the American Academy of Medicine in New York in 1929. It was very hard on him that on account of the appointment of a full-time professor of medicine at Bart's in 1920 he was not elected full physician in that year. But all this time he was teaching and working with great energy and perseverance. His book *Physiological Principles in Treatment* appeared in successive editions, and in 1927 he published his book on endocrinology for the use of general practitioners, *The Endocrines in General Medicine*, in which he gave an account of the endocrine system in relation to the autonomic nervous system.

Physiology

Langdon-Brown brought an entirely new outlook on clinical medicine to this seat of learning. He was a physiologist at heart and kept himself informed on advances in this subject throughout his active professional life.

During his early years of clinical practice he taught physiology, first as junior demonstrator in 1899 and then as demonstrator of physiology in 1902, an appointment which he held for a number of years. And so his first contribution to clinical medicine was the interpretation of the signs and symptoms of disease in terms of physiological reactions; at the same time he began to put therapeutics, or the treatment of disease, on a scientific as opposed to an empirical basis. In October, 1908, the first edition of his *Physiological Principles in Treatment* was published. The book was written to acquaint the busy practitioner with the leading changes in physiology, so that he might deduce from it the points on which his clinical conceptions should be modified. He was helped by Dr. Reginald Hilton in the preparation of the eighth edition, published in December, 1942, when the book had already been 34 years in circulation, in itself a notable indication of its value.

His interest in physiology was aroused by his teachers, and by Gaskell in particular. His interest in endocrinology, the ductless glands, had its origin in his own work and observation. One Easter he stayed

up at Cambridge, by special permission, to study embryology. He incubated hens' eggs, stopping their growth at different stages and cutting serial sections of the embryo, and then studying the sections under the microscope and drawing what he saw. He worked from dawn to dusk; in later years he wrote of his excitement, in those days, of seeing the brain, the backbone, the eyes, and the heart forming themselves before his eyes. He wrote: "I could hardly tear myself away from this self-imposed task. I can still recall the thrill as I saw, what had not then been described, the pituitary gland arising like a nephridium, which according to a theory I was already formulating it ought to do. I remember drawing a diagram on the laboratory bench before a group of fellow students to illustrate the idea of the evolution of the ductless glands (whose functions were then quite unknown) which was surging in my brain. It is an essential part of my pleasure in the work that I am now doing that it links directly with the happy labours of those days." What a vivid description this is of his own discovery of one of the "hidden mysteries of nature and science."

The Sympathetic Nervous System

Langdon-Brown was much influenced by Gaskell, whom he has described as "one of the greatest minds that ever adorned British physiology," and he said that an account of the sympathetic nervous system written before Gaskell was like writing a description of the circulation before Harvey. Speaking metaphorically, in those days more than one chapter was being written in the new Book of Physiology, and the contributors were collected by Michael Foster, who had a genius for choosing his men. Gaskell wrote the first chapter by his researches on the innervation of the heart; he laid the foundation on which modern cardiology is built. In the second chapter he showed that the nerve fibres which flowed from the spinal cord into the sympathetic chain were of smaller calibre than the nerves to the skeletal muscles, and by this standard he was able to show that there were fibres with visceral functions in the cranial and sacral nerves. J. N. Langley, with much help from Hugh K. Anderson, showed by his nicotine method that these small medullated fibres ended round cells in one or more sympathetic nuclei from which a new non-medullated fibre passed to its ultimate destination. Langley gave us a plan of what he called the autonomic nervous system, and he showed that it consisted of two parts—namely, the sympathetic and the parasympathetic—while Gaskell showed that when these two parts were distributed to the same structure their function was antagonistic.

Langdon-Brown was interested at once in the close connexion of the sympathetic nervous system with the ductless glands, and in his Croonian Lectures in 1919 he quotes Gaskell verbatim in his account of the evolution of the suprarenal glands. It is a curious story of chromaffin cells, which appear to originate in the central nervous system, and in the segmented worms they remain there. In evolution the sympathetic cells emigrate from the central nervous system into outlying nuclei accompanied by the chromaffin cells. Gaskell wrote: "The evidence of embryology and comparative anatomy thus points strongly to the conclusion that the sympathetic nervous system arose from the nerve cells containing adrenalin . . . and that when these cells left the central nervous system to become peripheral they left not as single cells but as two separate cells, one of which contained all the adrenalin and formed the chromaffin system, and the other the nerve cells of the sympathetic system of the vertebrate."

Since then it may be that a comparable phenomenon has been discovered in regard to two groups of nerve cells in the hypothalamus—namely, the supra-optic and paraventricular nuclei. These two nuclei are a single mass of cells in submammalian vertebrates; in man they are distinct, but they have the same peculiar cytological characters. It has been shown by anatomists that these nerve cells may contain droplets of colloidal material in their cytoplasm. It seems that these small droplets may later coalesce into larger globules, which are extruded into the intercellular ground substance and taken up into blood vessels. It is noted that these two nuclei are permeated by an exceedingly rich capillary network, which, says Le Gros Clark, from whom this description is taken, suggests a high grade of metabolic activity. This is not yet proved physiologically, but the comparison with the origin of the cells of the suprarenal medulla from nerve cells in the spinal cord is evident, and so knowledge advances and the ball passes to and fro between physiologist and anatomist, and now in neuropsychiatry the biochemists and physicists are making their contribution to the game.

It was the close connexion of the hypothalamus with the pituitary and the importance of the pituitary gland in its effect on the function of other ductless glands that led Langdon-Brown to name the pituitary gland the "leader of the endocrine orchestra"; and in all his teaching as a clinician in later years he realized the close integration of function of the sympathetic nervous system and the ductless glands.

Psychology

The advance in our understanding of functional disorders has been so rapid in recent years that it is difficult to realize the darkness and fog that enveloped the subject of psychoneurosis 40 years ago, when Langdon-Brown began to apply his knowledge of the autonomic nervous system and ductless glands to the elucidation of neurotic behaviour. At that time psychologists were regarded as cranks and the average reaction to psychoneurosis was one of antipathy or disdain. I can illustrate this attitude of mind from my own experience in the examination for membership of this College in 1914, before the outbreak of war. As I entered the room for the viva voce examination I found the President sitting at the head of a large table and at the same table were the members of the Board of Censors. I was invited to take an empty chair on the President's right. The first and, as it turned out to be, the only question put to me by this distinguished company of Fellows of the College was asked by the President as soon as I had taken my seat: "Tell me, Dr. Evans, what diagnosis you would make in the case of a woman who had had her appendix removed for abdominal pain and later her gall-bladder removed for the same reason, and who during the next few years had no less than four abdominal operations for the division of adhesions?" After I had made a number of diagnoses, all of which I feared were futile, the President, seeing that I was nonplussed, said to me in a kindly way, "You have a lot to learn, Dr. Evans. This woman was suffering from Cheirurgophilia. It is a common complaint, Dr. Evans."

There were several reasons that led Langdon-Brown to develop an interest in psychology. He was mindful of Hippocrates' injunction to examine the whole of the patient. He realized that this required more than the simple physical examination that he had been taught by Dr. Gee, and that it involved the consideration of the patient's whole attitude to life, both past and present, and his adjustment to his environment. In the second place, he was influenced by his friend Dr. W. H. R. Rivers, who was brought from St. Bartholomew's to Cambridge by Michael Foster in 1893 to lecture on the physiology of the special senses. Rivers was a member of the expedition to the Torres Straits organized by Dr. A. C. Haddon, and Langdon-Brown remarks that the party went out as physiologists and returned psychologists. Here, then, was a man of high scientific reputation and unimpeachable integrity who found his true mission in life in the treatment of soldiers suffering from war neuroses. In the third place, Langdon-Brown had had experience of war as senior physician in the Imperial Yeomanry Hospital, Pretoria, in the South African War. But the first world war was different. Much larger numbers were involved and the hardships and terrors of war were greater, and this brought him to realize the importance of emotional disturbance in causing physical ills. He found that physiological principles and facts could be as well applied to war neuroses and later to civilian neuroses as to the physical ills which he had chiefly studied up to date.

In his inaugural lecture as regius professor of physic in the University of Cambridge, Langdon-Brown gives a bird's-eye view of the relation of emotion to organ function, and explains in simple language how emotional stress may cause symptoms of disease. The following illustrates his approach to one aspect of this large subject. "When under conditions of modern life emotion is dissociated from the movement it should evoke under more primitive conditions, the sympathetic disturbance may continue. The mobilized army which is not allowed to fight the enemy becomes a danger to its own country." The same notion must have been in the mind of William Blake when he wrote: "Better murder an infant in its cradle than nurse unacted desires." Then, expanding his thesis, Langdon-Brown continued: "Nervous impulses tend to run along accustomed channels. The exciting cause may long have passed from the realm of consciousness, but its effects may continue. Designed for an intensive preparation for action or defence, the sympathetic response may be dissociated, perverted, or prolonged, with serious effects on the individual. The pressure of the blood or its sugar content may be kept too high, the digestive processes in stomach or intestines may be inhibited, from purely emotional causes, yet ultimately leading to organic changes in structure." This is an interesting passage because it introduces two ideas—namely, organ habit and functional disorder as the cause of change in structure.

In 1938, when President of the Medical Society of Individual Psychology of London, Langdon-Brown gave his own answer to how he became interested in medical psychology. In this address he dealt with Adler's contribution to general medicine. He first referred to Adler as having linked psychoneuroses with organ inferiority, thereby enabling orthodox medicine to join hands amicably with the new psychology; and he said that Adler's main theses had been the early formation of a style of life, the significance of each child's position in the family hierarchy, the importance of knowing the goal towards which the individual is consciously or unconsciously striving, and the vital necessity for co-operation with others. From Adler, Langdon-Brown passed to Jung, attracted by Jung's wider and more far-reaching conception of the human mind.

Teaching

Langdon-Brown was a great teacher not only of clinical medicine to students within the walls of St. Bartholomew's Hospital but also to the world at large in many lectures and addresses that he gave to important medical, scientific, and literary societies.

Professor V. H. Mottram, who has had forty years' experience of teaching physiology—a Cambridge man and well known to many who are here to-day—in a broadcast talk on education given three years ago provided an insight into the make-up of a good teacher or educator. What he said applies so truly to Langdon-Brown that I will quote some of his words: "It is axiomatic," said Mottram, "that education should set out to develop those qualities which have enabled man to evolve from and dominate the kingdoms of plants and animals. At the head of the list are the faculties which we can loosely term spiritual: awe in the presence of the sublime; reverence for the true, the good, and the beautiful; worship of the numinous (which means of or belonging to the deity, the presiding power or spirit). . . . Next comes the capacity for making use of the stored wisdom of the past, oral and written. This needs language. . . . No one incapable of the accurate use of language can think; accurate language —English—spoken, written, or declaimed, prose or poetry."

Langdon-Brown had all this, and it was born in him. Both in discourse and in writing he made frequent reference to the spiritual component of human nature, and in all that is and is to be he realized the handiwork of the Great Architect of the Universe. Thus when as an undergraduate he embarked on the study of embryology he was completely thrilled. For him it was "a lovely science." In his own words, "Wonderful beyond anything I had hitherto learned was the marvellous energy of the fertilized cell; the Unseen Potter moulding the growing protoplasm deftly according to a preconceived plan." Of the three great experimental psychologists, Freud, Adler, and Jung, he was most in sympathy with Jung, because, as he said, "Jung of all men is best qualified to reconcile life with spiritual values." And he went on to say, "Man is more than a bundle of conditioned reflexes and behaviourism, and can never remain satisfied with psychology without the psyche. It has been suggested that it would be well to study the simpler Adlerian philosophy of social co-operation on the way to the study of Jung, for with Jung lies the future of psychology that can best explain and meet the deepest emotional needs." It was this feeling for the sublime which took him away from the material grandeur of Roman antiquities and led him to find a deeper satisfaction in Greek art and mythology.

In the nineteen-thirties his visits to Rome ceased. He said that he had come to dislike the fact that the most striking landmarks of the city were memorials to the individual. That the Roman, hating the transience of life, demanded some projection of the ego. Thereafter he spent more time in Athens and in the Greek islands,

finding far greater appeal in the reticence of the sceptical and modest Greeks—with their "whispers of a sigh to greatness." In Grecian art he found his ideal of created beauty, and his description of a statue, one of several dredged up off the coast of Greece, which he watched being carefully cleaned in the Museum of Athens, records his feelings on this occasion. "It was an exquisitely beautiful figure of a boy, perfect in every respect except for the palm of his left hand. His right arm was uplifted and he appeared to be gazing with wonder and delight at something which has now vanished, but once rested on that left hand. It has been suggested that this was a lyre which the boy had struck and that he stood enchanted by the music he had created. . . . For me," he wrote, "it was a symbol of the recurrent wonder and delight that different generations have experienced on discovering again the treasures of the Greek mind which more than once have sunk beneath a sea of indifference and neglect." I have the permission of Freda Langdon-Brown to quote from a letter she wrote to me that these her husband's words "speak so clearly to me of him and his love of beauty, and of that enchanted and enchanting quality of awe and wonder which was his to hold and share to the end of his life."

Accurate Use of Words

As to the second qualification for a lecturer or educator, Langdon-Brown was equally well endowed. An accurate use of words is of course essential to clear thinking; this is brought home to us by the Greek word λόγος, which means both a word—that is, the outward form by which an inward thought is expressed—and the inward thought itself. Thus λόγος comprehends both *ratio* and *oratio* in the Latin language. But the word, the spoken or the written word, means much more than this to us. It expresses at once both thought and feeling, it expresses the whole range of feeling, mood, emotion, and affect—affect means mental disposition, which is the essential basis of personality. And so for Langdon-Brown the accurate use of words was an expression of absolute sincerity and truth, which were hall-marks of his character, and I can illustrate this by a simple conversation as we walked to his home in Cavendish Square after a meeting. It was in 1935, soon after Hitler had arrived on the world's stage. I asked Langdon-Brown what he thought of Hitler. His answer was, "I do not trust him; he does not speak the truth. I believe the words in the Bible, 'In the beginning was the word, and the word was with God, and the word was God. The same was in the beginning with God.' You can't get away from that," he added, meaning the sanctity of the spoken word and the sacrilege of lying.

His literary education began when he was very young. He described his father's study as an enchanted room, lined to the ceiling with books: volumes of old topographical prints his father had collected; editions of *Pilgrim's Progress* in sixty languages; Bunyan's cabinet, walking-stick, and mug; Gibbons's *Decline and Fall*; Smith's *Dictionary of Greek and Roman Biography and Mythology*; Chaucer's and Shakespeare's works. Here he sat, his legs too short to reach the ground, a reading-desk in front of him, reading while his father wrote. It recalls Wordsworth's lines:

> "And books are yours
> Within whose silent chambers treasure lies
> Preserved from age to age."

Langdon-Brown had a receptive mind and a retentive memory. He had great knowlege and a store of wisdom to impart. He did me the honour of asking me to collaborate with him in writing the sections on diseases of the kidney and vasomotor neuroses in Price's *Textbook of Medicine*, the first edition of which was published in 1922. We continued together in this work, through seven editions, until he died. We used to work together after dinner at night. We worked late. He never seemed to tire, and it was remarkable that he always had the words and phrases immediately at hand to express what was in his mind, whether for construction of something new or alteration of what was already written. Dr. Hilton has told me that he had the same experience of his quick brain and facility of expression when they worked together on the later new editions of the *Physiological Principles in Treatment*. It is fitting for me here to pay tribute to the generosity of his character, his patience and forbearance, and his great kindness.

Contribution to Literature

Langdon-Brown's contribution to English literature is his book entitled *Thus We Are Men*. It is largely a collection of lectures and addresses which he gave at various times, and it is dedicated to his wife ("my collaborator"). In this book the reader will find an account of some viewpoints of modern psychology and the author's own experience of their application to the practice of clinical medicine. It is a wonderful book to read: it reflects so much of a highly cultured mind, and it contains a number of the author's original ideas. One of these concerns the psychology of authorship, for it was Langdon-Brown's idea that literary criticism would be a more living thing if it were realized that, in works of imagination, a revelation of the working of the author's unconscious mind is to be found in his writings, although, as he remarks, it is not permissible to treat the writings of an author as if they were strictly autobiographical. He was much interested in Barrie's works, and in a chapter entitled "Myth, Phantasy, and Mary Rose" he interprets the whole genesis of Peter Pan in terms of a mother-fixation complex. This is Barrie. If, then, Sir Walter Langdon-Brown's thesis is applied to his own writings, the reader is arrested by his account of his meeting Barrie. "The only time I had the pleasure of meeting Barrie," he wrote, "I mentioned the idea that Lob was Peter Pan grown old. Barrie replied, 'That's good; how did you find it out?' I replied, 'My wife told me.' 'She must be a remarkable woman,' was his comment." And so he lets his conversation with Barrie tell the world that the theme of this chapter was given him by his collaborator.

Thus We Are Men was published in 1938. An American writer, Dr. Alvarez, came across this book ten years later and published a review of it in *Gastroenterology*. He wrote of its being "full of inspiration," and of its author he said: "It is immediately evident that he was not only a master of the practice of medicine but also one of the best educated of the world's physicians."

In reading the works of Langdon-Brown one is repeatedly impressed by the soundness of his views and his anticipation of advancing knowledge. I will give two illustrations in support of this statement. In the first Suckling Memorial Lecture, delivered at University College Hospital in 1939, the subject of which was visceral symptoms in emotional states, Sir Walter Langdon-Brown discussed the connexion between

emotional expression and the visceral nervous system. "Mental activity," he said, "naturally largely depends on the stream of afferent impulses pouring in on all sides." He then quoted from Professor Michael Foster as follows: "We can hardly doubt but that volitional and other psychical processes would soon come to a standstill and consciousness finish" in the absence of these afferent impulses. Michael Foster had quoted a remarkable case of a man who was blind in one eye, who was totally deaf, and who had general cutaneous anaesthesia. His sole remaining tie with the outside world was through the other eye, and if this were closed he simply went to sleep.

In 1947, in his Lumleian Lectures, Dr. Purdon Martin reported a comparable case of a woman aged 56 who suffered a cerebral haemorrhage at the level of the middle of the pons which spread horizontally and involved the whole median fillet on either side and the adjacent lateral fillets and other auditory structures, as well as the sixth nuclei and the right facial nerve. This lesion had been diagnosed correctly during life. When one median fillet was involved the woman was drowsy; when the other side became involved it was impossible to keep her awake. She had become deaf too, and so, writes Dr. Martin, when she closed her eyes all her channels of reception of impressions from without were interrupted (except smell, which was not tested), and in these circumstances she fell into a deep sleep. And Dr. Martin asks, "Is it awareness of the body that is essential for consciousness?" and he concludes that if nearly all the sensory pathways are interrupted the activity of the cortex is greatly depressed or is abolished.

Langdon-Brown more than once refers in his writings to the difference in relation of cortical *vis-à-vis* hypothalamic activity in most animals as compared with man. He writes: "Man is essentially an image maker: it is his human prerogative. Thus in most animals, who act from what we call instinct, action follows on stimulation of the perception mechanism with almost chemical swiftness and certainty; in man the nervous system is more complicated; perception is not instantly transformed into reaction; there seems to be an interval for choice."

Recent anatomical research has perhaps found the nervous pathway that makes it possible, as Langdon-Brown said, for the human being to think again. Nerve impulses from most, if not all, of the cerebral cortex connect with nerve cells in the temporal lobe. They are relayed from there to a subcortical centre called the hippocampus; it is a massed battery of cells whose fibres travel together in a well-defined bundle to the hypothalamus, the head ganglion or centre of the involuntary nervous system. In most animals nerve impulses from the cortex reaching the head ganglion or hypothalamus in this way would lead to an explosion of involuntary activity such as rage, or fight or flight. But in man and the higher mammals these involuntary mechanisms are not necessarily stimulated to activity by these nerve impulses, and it may be because they are immediately relayed back to the cortex—that is, to the frontal lobe. Professor Le Gros Clark in his contribution to *Perspectives in Neuropsychiatry*, edited by Dr. Derek Richter, asks: "Can this possibly provide the basis for the development of the more intelligent type of behaviour involving more continuous cortical processes and characterized by rational deliberation, rather than the instinctive type of behaviour in which the first results of cortical activity are immediately expanded in impulsive actions of a purely emotional character?"

The anatomical connexions of the prefrontal cerebral cortex with the hypothalamus had occurred to Langdon-Brown already thirteen years before as the possible pathway along which psychical activity expressed itself in physical symptoms.

Royal College of Physicians

Langdon-Brown made valuable contributions to the life and work of this College. He was elected a Fellow of the College in 1908, and gave the Croonian Lectures entitled "The Role of the Sympathetic Nervous System in Disease" in 1918 and the Harveian Oration in 1936. It was in 1931 that he served as Senior Censor, and it seemed to many Fellows of the College that he might in due course be elected our President.

Any attempt to portray the life and character of Langdon-Brown would be incomplete without a reference to an unhappy time in his life which lasted over a period of years. There is, I feel, some truth in the idea of salvation through suffering, in the idea that tribulation brings at least a sensation of the power of God and perhaps a better understanding of His purpose. It has seemed to me that the text on Rahere's tomb in the church of St. Bartholomew the Great actually applies to these years in the life of Langdon-Brown; the words are those of the third verse of the 51st chapter of the Book of the Prophet Isaiah, "For the Lord shall comfort Zion: he will comfort all her waste places; and he will make her wilderness like Eden, and her desert like the garden of the Lord." In due course joy and gladness came again into the life of Langdon-Brown, and he pursued his objectives with renewed vigour and enthusiasm.

Regius Professor

In the summer of 1932 the Prime Minister offered Langdon-Brown the chair of regius professor of physic at Cambridge University. This appointment brought him great happiness as well as honour, because it meant his return to his "beloved alma mater," his affectionate term for Cambridge. It is one thing to be appointed regius professor of physic and it quite another to find a way into the social life of the university and so become one of those who belong to the place. The door was opened to him by Corpus Christi College, who offered him a professorial fellowship. This invitation was made in an exceptional way, for, so far as is known, he is the only Fellow of the College who has been thus invited "unseen by the Fellows of the College." He found great social interest here in dining with the Fellows, his room in the College and the Master's Lodge always hospitably open both to him and to his wife. He received the honour of knighthood in 1935, and on February 20 Sir Walter Langdon-Brown received the accolade from his Majesty King George V.

The years of his appointment as regius professor were fully occupied with work of a varied kind. His inaugural lecture as regius professor, of which chair he was the twentieth holder in 392 years, was of the highest order. He gave a number of lectures and addresses in addition to set courses of lectures for the university. He was an examiner at Cardiff and Sheffield Universities, and in the National University of Ireland, and he conducted the Cambridge M.B. examination in medicine. In 1935 his retirement under the age limit for

professors came all too soon. He left Cambridge with deep regret, full of gratitude for the kindness and friendship he had received from Corpus Christi College and from that College of his young enthusiasm, St. John's College, whence came the invitation which he received and accepted with great pride—to give the Linacre lecture in 1941. He returned to Cambridge for the last years of his life, and he was occupied till the end in writing *Some Chapters in Cambridge Medical History*, published in 1946 by the University Press.

Conclusion

Sir Walter Langdon-Brown died in 1946 at the age of 76 honoured by all and loved by his friends, and holding the devoted affection of the nearest and dearest to him. He used to speak with pleasure and satisfaction of the survival of the institutions, of his beloved university in particular, throughout future generations. I would like to speak of the survival of his life's work, the central thesis of which is best defined in his own words. "As we are animals we conform to biological laws. Our future evolution physically is improbable and mentally unlikely. Therefore only a psychological evolution remains. This necessitates co-operation, not merely instinctive as with bees and ants, but intelligent and voluntary. Now we, like all animals, carry with us vestigial traces of our past ancestry, not least in our mental processes. To develop psychologically we must understand ourselves, and it should help us to do so if we can find ways to investigate those hidden depths in our minds from which we draw our impulses."

Psychology has for some years been chiefly concerned in looking back, and it has been a preoccupation of psychologists to search out the origin of thoughts and feelings. This has been a contribution to knowledge as was Charles Darwin's work on the origin of the species. Langdon-Brown asks us to look forward and to find ways—new ways—to investigate the hidden depths of the human mind. Godwin Baynes, speaking of a moral act or response being invariably individual in origin, said, "A moral feeling can be imparted to a community, but its source is in the solitary individual soul." The same holds good for original ideas; they too have their origin in the individual mind. The work and teaching of Sir Walter Langdon-Brown was spread on so large a canvas that it must be viewed from a distance to be seen as a whole. His contribution to medicine was no discovery of factual knowledge, nor was it the presentation of some ideas; it was a wide conception which has given a fresh inspiration and a new direction to the understanding of the human mind.

According to the Swedish International Press Bureau the Swedish Medical Association has agreed on a *Codex Ethicus Medicorum* embodying 15 rules of ethics for medical practitioners in Sweden. Simultaneously a new set of rules for medical specialists has been agreed upon. These two briefs of rules aim at maintaining the high standard of Swedish physicians. They contain instructions on the relationship between the doctor and his patient, and clearly define the duty of the physician towards the preservation of human life, professional secrecy and ethical points about monetary reward, publicity, etc. It is stressed specially that a physician should refrain from advertising himself or his work in an importunate or flagrant way and not draw inappropriate attention to his person when giving information to the Press.

GENERALIZED OSTEOARTHRITIS AND HEBERDEN'S NODES

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Osteoarthritis is usually considered to result from degenerative changes in the articular cartilage and other joint structures which occur to some extent in most individuals with advancing age, but which may occur prematurely in joints subjected to abnormal wear and tear from some special occupational stress or as a result of faulty joint mechanics.

Premature degeneration of a severe nature and more rapid in evolution occurs in joints in which the articular cartilage has been damaged by trauma, infection, or avascular necrosis of the underlying bone. Rapid degeneration may also occur in joints deprived of the protective reflexes afforded by normal pain and proprioceptive sensibility.

Although the degenerative arthritis of old age may affect many joints, the premature degeneration resulting from previous damage by trauma, etc., tends to affect only one or at the most a few joints, because the degenerative process is secondary to these causative factors, which as a rule are operative in only one or a few joints; and, since the degenerative process is slowly progressive, the resultant disability also tends to be slowly progressive, though acute painful incidents following trivial injury or unusual stress may be superadded.

The clinical and radiological features of degenerative arthritis are well known, and patients with this condition are seen with great frequency, particularly in orthopaedic clinics; but in clinics dealing largely with rheumatic disease one often sees polyarthritic patients in whom the joint changes in the later stages resemble those of degenerative arthritis, though they differ somewhat in that they often have a rather acute spontaneous onset. Furthermore, these patients tend to present a definite pattern of joint involvement characterized by affection of the distal interphalangeal joints of the fingers, and the first carpo-metacarpal joints in the hand, the great toes, and first tarso-metatarsal joints in the feet, the interfacetal joints of the spine, the knees, hips, and other limb joints. These patients also present certain other characteristic clinical and radiological features which differ from those found in classical degenerative joint disease on the one hand and polyarthritis of the rheumatoid type on the other, and we have come to classify these cases under the heading of primary generalized osteoarthritis, which we consider to be a distinct clinical entity.

More than 150 years ago William Heberden recognized the fact that the nodes so often seen over the distal interphalangeal joints of the fingers represented a condition distinct from either gout or rheumatism, and in 1805 Haygarth described 34 cases of multiple arthritis associated with Heberden's nodes which he classified separately under the heading of "nodosity of joints." A

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polyarticular osteoarthritis was also mentioned by Adams (1857) and Charcot (1881). In more recent years Cecil and Archer (1926), while classifying 182 cases of degenerative arthritis attending their rheumatism clinic, noted that only 20 were of the classical monarticular type and only 17 of the senile type, while 145 were polyarticular and usually associated with Heberden's nodes. Because this latter group was largely composed of middle-aged women they considered this form of arthritis to be "menopausal." Francon (1950) also describes a generalized form of arthritis associated with Heberden's nodes.

On the other hand, Stecher (1948) considered these nodes to be a distinct entity, although he did note a tendency to involvement of other joints (Stecher, 1946b); but in this connexion it must be remembered that Stecher was engaged in a genetic study of the incidence of asymptomatic nodes in the general population, and he was less concerned with the more severe forms of this condition which send the sufferer to the rheumatism clinic. Stecher, however, made a most valuable contribution when he separated the post-traumatic type of node from the idiopathic inherited variety.

Interest in the question of whether Heberden's nodes are associated with generalized arthritis has been stimulated in this department because a routine examination of all the joints of the body is carried out in every patient attending the clinic, even though they may complain only of a single joint, and this routine has allowed us to recognize more clearly the patterns of joint involvement characteristic of the various forms of articular disease, and in particular that associated with Heberden's nodes.

The following description of what we consider to be primary generalized osteoarthritis is based on the experience of 391 cases of osteoarthritis taken from a total of 1,813 cases of arthritis of all types seen in this department during the three years preceding 1951. In addition we have made a detailed analysis of the 196 cases of osteoarthritis seen during the year 1950. Of these, 120 had either Heberden's nodes or arthritis of the first carpo-metacarpal joints or both; 20 were of the classical monarticular degenerative type, and 56 were classed as miscellaneous because, although their arthritis was polyarticular, the characteristic involvement of the hands was not found.

Sex and Age

In the first instance we will describe the features of those cases with characteristic involvement of the hand joints. The condition is found predominantly in middle-aged women; thus of the 120 analysed cases 110 were in women, whose ages at the onset of the disease varied from 35 to 73, with a mean of 52 years. There was, however, no accurate correlation with the menopause, and in 22 cases the arthritis began while the menses were still normal. The age of onset in the 10 men ranged from 20 to 63, with a mean of 50.7 years.

Pattern of Joint Involvement

This is one of the most characteristic features of primary generalized osteoarthritis. Thus of the 120 analysed cases 103 had Heberden's nodes, 79 had arthritis of the first carpo-metacarpal joints, and 62 had both. In a few cases the arthritis also affected the joint between the scaphoid and the multangulum majus, but the rest of the carpus and the metacarpo-phalangeal joints which are so characteristically affected in rheumatoid arthritis were usually spared, only very slight changes in these joints being found in 19 cases. On the other hand, the proximal interphalangeal joints were often severely involved, these joints being affected to some extent in 49 cases. The joints of the feet were affected in 50 cases, and in 40 of these the metatarso-phalangeal joint of the great toes was the one maximally affected.

In 22 cases there was also some involvement of the lateral metatarso-phalangeal joints, but the changes in these were always less than in the great toe, which is the reverse of what is found in rheumatoid arthritis; there was also some tarsal arthritis in 20 cases, and in several the joint between the first cuneiform and the first metatarsal was markedly affected. The knees were affected in 64 cases, nearly always bilaterally, and the hips in 36, while the spine was affected in 57, being the most frequent part to be involved after the hands and knees. The remaining joints were but rarely affected, and usually only to a lesser degree in those florid cases in which nearly all the joints of the body were involved.

Nature of Joint Lesion

Each affected joint tends to pass through two stages: an initial relatively acute phase during which the joint may be warm, red, and exquisitely tender; and, some months later, a chronic phase characterized by bony outgrowths around the joint margins. In the acute phase the joint is usually slightly swollen and may contain a small effusion, this excess fluid being particularly noticeable in the knees. The massive soft-tissue swelling and synovial thickening characteristic of many cases of rheumatoid arthritis is, however, not seen. During this initial acute phase spontaneous pain may be very troublesome. It often comes in severe spasms, particularly at night-time, and waking the patient in the early hours. When the finger-joints are severely affected and the skin over them becomes reddened and tender the pain acquires a characteristic burning, tingling, and bursting quality, and the patients place their hands outside the bed to obtain relief. This type of pain is particularly evident in those cases in which small cystic swellings form over the finger-joints, finally to burst through the skin, discharging a little glairy fluid (Fig. 1). More usually the pain is of the deep aching type, and is not well localized to the joints, often spreading widely up and down the limbs. This deep pain is also markedly aggravated by cooling the part, and these patients avoid cold water and dread exposing their hands in cold weather, although vasospasm is not a feature of this condition.

FIG. 1.—Early node with discharging cyst (Case 1).

During the acute phase a few minutes of arterial occlusion produced by a cuff on the arm will cause a rapid and severe increase of pain: in this respect the pain resembles that of acute suppurative lesions such as whitlows (Addis, Jepson, and Kellgren,

1950), and indeed two of our more acute cases were initially thought to be suffering from pulp-space infections of the finger. When a large joint such as the knee is affected in this acute manner the pain may be very severe, and the condition is not unlike that of a low-grade suppurative arthritis, though the constitutional disturbance usually associated with infection is absent.

After a period of several months the acute phase subsides and the clinical signs of inflammation disappear, giving place to the chronic phase, which is characterized by massive bony outgrowths around the joint margins. At this stage there is little pain, and, in spite of the unsightly deformity and gross radiological changes, the joints often retain a fair range of movement and function

FIG. 2.—Multiple nodes and enlargement and adduction deformity of first carpo-metacarpal joint (Case 2).

is largely restored; thus permanent crippling very rarely ensues. The appearance of the hand in a more advanced case is shown in Fig. 2. Note the bony ridges over the terminal joints of the finger, the enlargement and deformity of the proximal interphalangeal joints, and also the bony enlargement, partial subluxation, and adduction deformity of the first carpo-metacarpal joint, giving the hand a curious squared appearance.

Fig. 3 shows the hand of a very advanced case. Although in this case nearly all the joints show bony enlargement the characteristic appearance is still retained. The condition in the hand is quite characteristic and easily recognized, but in the less accessible joints bony enlargement is less readily appreciated, and in the spinal articular processes it may be easily overlooked. Thus in the spine there is often a history of severe back pain and disability lasting several months followed by partial recovery which leaves the patient with only slight limitation of spinal movement, particularly in side flexion and rotation, and it is only by radiography that the marked bony outgrowth on the articular facets and spinous processes can be demonstrated. As the disease progresses first one joint becomes involved and then another, each joint passing through a more or less painful phase and going on to bony enlargement, which is relatively painless.

By no means all the cases present with an onset which is acute enough to resemble a pyogenic process; indeed, only 21 of the 120 cases had incidents of this type in one joint or another, the more usual story being one of a sub-acute or even gradual onset. Nevertheless, a more or less

FIG. 3.—Advanced case with bony enlargement of all joints.

painful initial phase in each affected joint is the rule in the more severe cases. The characteristic course of the disease is well illustrated by the following case histories.

Case 1

A housewife aged 56 had noticed increasing deformity in the distal and proximal interphalangeal joints of the hands accompanied by much pain for 15 years. During this time acute joint incidents had been noticed, in which first one and then another of the distal interphalangeal joints of the hands would become acutely swollen, painful, and red, and a cystic swelling would appear at the lateral aspect of the joint. This became so painful that she evacuated it with a needle, after which the pain would subside for about a fortnight, to recur as the swelling filled up again. Gradually the swelling became painless, stopped discharging, and left a hard bony knob at the base of the distal phalanx. This series of events then occurred in another distal interphalangeal joint over a period of six months before the discharge finally ceased. For four years she had been troubled by pain and stiffness in the left ankle and had had a goitre from the age of 14 years. The menopause occurred at 46. One sister had Heberden's nodes.

On examination she was seen to be a healthy woman weighing 8 st. 12 lb. (56.2 kg.). A small diffuse goitre was present. There was no clinical evidence of visceral disease. The hands showed large tender Heberden's nodes, and enlargement, tenderness, and limited movement of most of the proximal interphalangeal joints and both first carpo-metacarpal joints. There was also some swelling of the left ankle, and its movements were slightly limited. The distal interphalangeal joint of the right middle finger was very swollen and an acutely tender cystic swelling was present on the lateral edge of the joint, which had discharged a yellowish jelly-like fluid. The erythrocyte sedimentation rate was 35 mm. in one hour, the haemoglobin 84%, and the white blood cells 5,700 per c.mm.

Case 2

A housewife aged 65 had first developed pain and swelling of the distal interphalangeal joints and the first carpo-metacarpal joints 12 years ago. Acute episodes had occurred in the distal interphalangeal joints, lasting months and leaving Heberden's nodes in their wake. At this time the shoulders also became stiff. Eight years ago the knees had become swollen, painful, and stiff, and after a further four years the lower part of the back had become painful. She had been gaining weight for about four years. She had pernicious anaemia at 57 years and had passed a tapeworm at 63. The menopause occurred at 54. There was no family history of rheumatism.

On examination she was seen to be a robust woman weighing 10 st. 12 lb. (69 kg.). There was no visceral disease. Painful Heberden's nodes were present on all the fingers; both first carpo-metacarpal joints were painful, swollen, and limited, especially the left one; and both knees were slightly swollen and painful, and contained effusions. Movement in the right was from 5 to 110 degrees flexion, while that in the left was normal. She attended monthly for observation, and in the third month suddenly developed acute pain in the right knee, which became very much more swollen owing to increase in the effusion; the overlying skin was reddened, and movement was reduced to 5 to 70 degrees flexion. The joint had, in fact, the appearance of an acute arthritis, and she took to her bed for a fortnight, by the end of which time the pain began to subside. A plaster leg cylinder was then applied and she was encouraged to use the leg. After six weeks the plaster was removed, as the knee had returned to its previous condition; its movement was again what it had been before the acute incident. When she was first seen the erythrocyte sedimentation rate was 15 mm. in one hour; it rose to 26 mm. during the acute joint incident. The haemoglobin was 86% and the white cell count 5,300 per c.mm.

Case 3

A housewife aged 60 had noticed pain and swelling of the first carpo-metacarpal joints of both hands with weakness of the grip six years ago. Several months later the distal interphalangeal joints of the middle fingers of each hand became acutely swollen and painful, and a cystic swelling appeared on the dorsum of the middle left distal interphalangeal joint which discharged a yellowish fluid intermittently for a considerable time. The acute swellings subsequently involved the distal interphalangeal joints of the other fingers of both hands, eventually becoming painless over a period of three years, leaving bony swellings typical of Heberden's nodes. Four years ago the right hip gradually became troublesome: she noticed stabbing pains in the thigh on walking, the hip gradually developed a flexion deformity, and she suffered from severe pain in the groins, particularly when lying in bed. At this time walking became difficult.

Eighteen months ago she sought surgical advice, and, after a right subtrochanteric osteotomy had been performed, was nursed in a double hip spica for the next five months. On removal of the plaster it was noticed that the left hip and lumbar spine had become stiff and painful. Since removal of the plaster the knees have been painful and have gradually lost their range of movement, and she is now only able to walk a few yards with the aid of sticks. Her general health has remained good throughout, and there has been no weight loss. The menopause occurred at 53 years. There was no family history of rheumatism.

On examination she was seen to be a pale slim woman in good general health but distressed by pain on movement in both hips. Her blood pressure was 210/110, but there were no clinical signs of visceral disease. Pronounced Heberden's nodes were present on the fingers and there were marked bony enlargement and deformity of the first carpo-metacarpal joints and some bony enlargement of the proximal interphalangeal joints, but the wrist movements were full and painless. Dupuytren's contracture of the fourth and fifth fingers was present in the right hand. The knees were slightly swollen and tender, and their movement was moderately limited. There was bony enlargement of the first metatarso-phalangeal joints of the feet, with some limitation of movement. Examination of the spine revealed a flattening of the lumbar curve and almost complete absence of movement in the dorsal and lumbar regions. The right hip was completely fixed in 10-degrees flexion, while the left hip was capable of movement through 15 degrees of flexion. The erythrocyte sedimentation rate was 13 mm. in one hour, the haemoglobin 98%, and the white cell count 4,400 per c.mm.

Other Clinical Features

In spite of the acute and apparently inflammatory nature of the initial arthritic process we have not observed any constitutional disturbance in these patients. Thus weight loss, which is such a feature of rheumatoid arthritis, was not observed, and the blood picture was not abnormal. On the other hand, the sedimentation rate, estimated by the Westergren method, was often somewhat raised; thus out of the 112 cases for which figures are available 66 had an E.S.R. of under 20 mm. in the hour. In 38 cases the E.S.R. was between 20 and 40 mm., but in only 8 cases was it over 40 mm. The mean value for the whole group was 19 mm. This contrasts with the findings in our group of 20 cases of monarticular degenerative arthritis, in which the E.S.R. was less than 20 mm. in every case, the mean value for the group being 11 mm. The differential agglutination reaction, which is so often positive in rheumatoid arthritis (Rose *et al.*, 1948; Ball, 1950), was also uniformly negative in these cases.

Soft-tissue lesions, such as thickening of the bursae, and widespread involvement of muscles and fascia were not observed. The florid multiple tendon lesions so characteristic of rheumatoid disease (Kellgren and Ball, 1950) were also not observed in these cases, although in 13 of them a few small firm nodules could be felt in the flexor tendons of the hands. There was also no tendency to vasospasm or excess sweating; neither were there any cutaneous or eye lesions or characteristic visceral disturbances. Thus the disease process seems to be largely confined to the joints, and particularly the diarthrodial joints.

It has been suggested by Fletcher (1947) that both obesity and hypertension occur with unusual frequency in patients with osteoarthritis. On the other hand, Stecher (1946a) did not find any such correlation with Heberden's nodes. Among our 120 cases there were no patients who were grossly obese, and in only four was the systolic blood pressure over 200 mm., and in only two was the diastolic pressure over 120 mm. Thus neither marked obesity nor serious hypertension appears to be a feature of generalized osteoarthritis.

Radiological Changes

The *x*-ray appearances of the stage of bony enlargement conform to those of osteoarthritis. There is narrowing of the joint space, marked sclerosis of the subchondral bone, and florid bony outgrowths at the articular margins. The radiographs reproduced in Figs. 4–9 illustrate the changes seen in the various joints commonly affected. The combination of Heberden's nodes and arthritis of the first carpo-metacarpal joint is a most characteristic finding, and the enlarged views of these joints show the marked tendency to bony enlargement that is so characteristic of the later stages. The changes in the spine (Fig. 7) are peculiar in that the intervertebral disks remain relatively unaffected, while the articular facets and the neural arches, including the spinous processes, become enormously enlarged and sclerosed, so that "kissing spines" are often seen. Thus the spinal changes conform to the osteoarthritis of Collins (1949), who distinguishes between these changes and the osteophytosis of the vertebral bodies which so frequently accompanies degeneration of the intervertebral disk.

In the hips (Fig. 8) the changes are less distinctive. There is a general loss of joint space and the femoral head tends to become elongated; in advanced cases it becomes enclosed in a deep sclerosed acetabulum, resulting from marked overgrowth of the acetabular margin and not from protrusio acetabuli. In several cases crumbling of the upper quadrant of the femoral head was noted in one hip, but in these instances there was a past history of significant trauma to the hip. In the knee (Fig. 9) the radiological picture is again fairly distinctive. There is marked narrowing of the joint space combined with rounded "molten wax" bony outgrowths at the articular margins and a marked absence of the sharp-pointed osteophytes so commonly seen in the

FIG. 4.—Whole hand, showing marked changes in terminal interphalangeal and first carpo-metacarpal joints: there are also slight changes in some of the proximal interphalangeal joints.

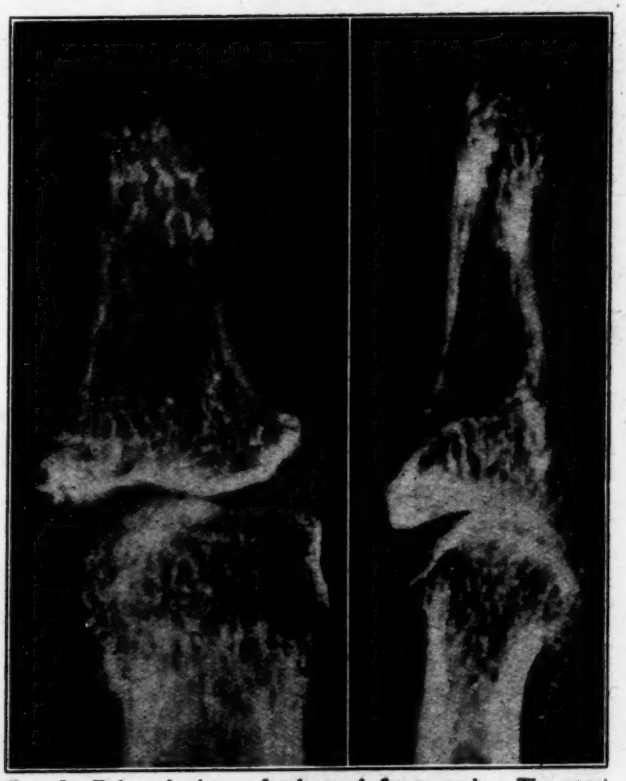

FIG. 5.—Enlarged views of advanced finger node. The most marked changes are seen in the lateral view.

FIG. 6.—Full-size view of first carpo-metacarpal joint showing much new bone formation.

FIG. 7.—Lumbar spine, showing marked enlargement of facets and spinous processes.

degenerative arthritis which follows injury.

Although the overall radiological picture is certainly that of osteoarthritis, in that narrowing of joint space, subchondral sclerosis, and marginal bony overgrowth are present, there are certain differences between the radiological appearances of primary generalized osteoarthritis and those of classical degenerative joint disease.

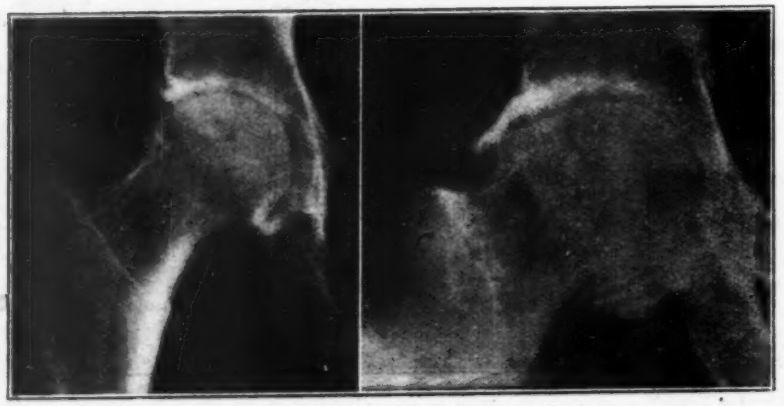

FIG. 8.—Hips, showing early and advanced changes.

FIG. 9.—Knee, showing marked "molten wax" osteophytes.

The Miscellaneous Group

On analysing the miscellaneous group of 56 patients who had polyarticular osteoarthritis but without Heberden's nodes or arthritis of the first carpo-metacarpal joints it became apparent that many of them presented features which we have come to regard as characteristic of primary generalized osteoarthritis, and it seems probable that further experience may justify the classification of many of these cases under the heading of generalized osteoarthritis; we are not yet, however, prepared to make this diagnosis in the absence of Heberden's nodes or arthritis of the first carpo-metacarpal joints. Furthermore, we fully recognize that there are many patients in whom degenerative arthritis of the terminal finger-joints may follow injury or unusual occupational strain (Stecher's traumatic nodes), and that arthritis of similar pathogenesis may affect the first carpo-metacarpal joint; but these cases are easily recognized, and have been excluded from the present investigation.

Treatment

In view of the large number of middle-aged women in our series and the fact that other workers have considered this form of arthritis to be menopausal, we carried out a blind clinical trial of oestrogen therapy. Twenty severely affected middle-aged women were selected, and were divided into two groups of 10, which were as evenly balanced as possible in regard to age, severity, and duration of symptoms, E.S.R., and number of joints affected. Mr. Lloyd, the hospital pharmacist, kindly provided us with two lots of indistinguishable tablets, A and B, one inert and the other containing 0.3 mg. of dienoestrol. These were administered in a dosage of one tablet three times a day for six months, 10 patients receiving tablets A and 10 tablets B. The patients were seen monthly and were fully assessed before treatment and at the end of six months. Neither group reported any marked subjective improvement, and examination revealed a slight deterioration in both groups. Thus the grip measured by the method of Janus (1950) fell slightly in both groups. The E.S.R. rose slightly in both groups, and in both there were a small number of previously affected joints which became painless and a larger number of previously normal joints which became painful during the six-months course. Most of the affected joints, however, remained unchanged. The mean values in the two groups before and after treatment are shown in the table.

	Before Treatment			After 6 Months				
	Grip	E.S.R.	No. of Joints Affected	Grip	E.S.R.	No. of Joints		
						Recovered	Unchanged	Newly Affected
Control ..	215	22	22	180	26	1	21	4
Dienoestrol	210	23	19	200	26	1	18	3

During the following six months the tablets were reversed, so that the patient previously receiving A now received B, and vice versa. The second six months has not quite been completed in all patients, but it is clear

that no change has taken place, except that while receiving B one or two patients noted uterine bleeding, and this, in fact, proved to be the active tablet. Although there were only 10 cases in each group the remarkable similarity in behaviour between the two groups suggests that dienoestrol in the dosage given fails to influence the arthritic process in any way.

In fact, we are not aware of any treatment which will influence the arthritic process, but many of these patients fear that they are suffering from rheumatoid arthritis and are grateful for an explanation of the nature of their complaint and its probable future course, and some relief may be obtained by the proper management of their arthritis. Thus acute painful episodes in the larger joints respond well to short periods of immobilization in plaster, and pain may also be temporarily relieved by local heat, which is most conveniently applied from an electric heating-pad that the patient can use in her own home. Aspirin analgesics may be helpful, but are not as effective in this condition as in rheumatoid arthritis. Surgical reconstruction of the larger joints is probably best avoided in these cases owing to the marked tendency for new joints to become affected. Fortunately most patients manage to continue a useful life, and it is only the exceptional case which becomes severely crippled.

Discussion

It would appear that the clinical syndrome which we have come to call primary generalized osteoarthritis has certain distinctive clinical and radiological features which enable it to be distinguished from secondary degenerative arthritis and also from rheumatoid arthritis and other allied polyarthritic conditions. Although generalized osteoarthritis has been recognized since the time of Heberden and Haygarth it appears to have been largely lost sight of in recent years, perhaps because it has been described under different names, such as nodosity of joints, menopausal arthritis, and so on. With the clearer definition of degenerative arthritis as an old-age change occurring prematurely in joints damaged by trauma, avascular necrosis, infection, or previous rheumatic disease, or in those worn out by occupational stress and faulty joint mechanics, a definite concept of osteoarthritis has developed.

The polyarticular form of osteoarthritis we have just described does not readily fit into this concept, and we suspect that this has led to its neglect and caused many cases to be classified as rheumatoid arthritis, or as atypical or "mixed" forms of arthritis. That rheumatoid arthritis may coexist with generalized osteoarthritis is very likely, as both diseases are common in middle-aged women, and in our series such a double diagnosis was made four times in 110 female cases. This, however, would be the expected number if the incidence were governed by chance, since in a recent field survey of the general population in a Lancashire town the incidence of rheumatoid arthritis was found to be 4% in the adult female population.

From the work of Stecher it would appear that idiopathic Heberden's nodes are exceedingly common in elderly people, and it seems likely that only in a minority of those affected are the symptoms severe enough to make the patient attend a clinic specializing in rheumatic disease, but in those who do attend such clinics multiple joint involvement is a common finding. We feel, however, that the question of the incidence of multiple joint involvement in people exhibiting asymptomatic Heberden's nodes requires reinvestigation. In our series only 20 out of 120 patients gave a history of similar disease in their known relatives, but a very different incidence of Heberden's nodes might have been revealed if the relatives had been examined, and we have certainly seen families in which all the sisters were severely affected. We are therefore inclined to the view that generalized osteoarthritis as we see it in the clinic represents a severe form of Stecher's idiopathic nodes. If that is so, this syndrome, like the nodes, may result from an inherited defect, and should be regarded as a constitutional disease.

Although in the later stages the joint lesions resemble those of classical degenerative arthritis, we have been unable to find a description of the joint changes during the initial acute phase, and this point clearly requires urgent investigation, as the nature of the morbid process at this stage remains unknown. Our object so far has been to define what seems to be a distinct clinical entity, and thereby to stimulate further investigation into its pathogenesis and the aetiological factors which influence its development.

Summary

From a study of 391 cases of osteoarthritis attending a rheumatic clinic we have been able to define a distinct clinical entity for which we suggest the name of primary generalized osteoarthritis. This condition occurs most often in middle-aged women, and is characterized by a distinct pattern of joint involvement, by a course in which each affected joint passes through an initial painful and more or less acute arthritic phase, and by other distinctive clinical and radiological features.

Generalized osteoarthritis is a constitutional disorder affecting the diarthrodial joints and probably represents a severe form of idiopathic Heberden's nodes. A therapeutic trial of oestrogen therapy gave negative results, but patients suffering from this disease may be helped considerably by the proper management of their complaints.

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The largest intake of first-year medical students for many years is reported by the Association of American Medical Colleges, who announced that 7,381 freshmen were admitted for the 1951–2 academic year (*New York Times*, January 12). It was also announced that applications for admittance had declined for the second year in succession. The fact that 30% of this year's applicants were applying for the second time is taken to indicate that about one of every two students who apply for admittance is ultimately accepted.

CORTISONE AND A.C.T.H. IN TREATMENT OF ANKYLOSING SPONDYLITIS

BY

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In this country ankylosing spondylitis is still regarded by most workers as a separate entity from rheumatoid arthritis, and at the recent meeting of the European League against Rheumatism in Barcelona both Forestier *et al.* (1951), on clinical grounds, and Van Swaay (1951), on histological grounds, maintained that the two were different conditions. Most workers in the United States of America accept the two as one disease entity, and favour the term rheumatoid spondylitis. In the *Primer of Rheumatic Diseases* of the American Rheumatism Association the condition is given one paragraph of 27 lines, following Still's disease and Felty's syndrome, under the title "Variants of Rheumatoid Arthritis." Here it inevitably becomes lost, submerged in the general picture of rheumatoid arthritis.

Hart *et al.* (1949) have argued that until something is known of the aetiology of the rheumatic diseases there is little to be gained by merging two unknowns and stating that they are one, particularly when in the vast majority of cases the clinical, radiological, and therapeutic aspects are so very different in the two conditions. It may be that many more cases of diffuse spondylitis with peripheral involvement occur in the New than in the Old World; there may be a geographical difference in the manifestations of the rheumatoid diseases. Be that as it may, when treatment of rheumatoid arthritis is discussed in American papers one never knows how many cases are what we would call ankylosing spondylitis and how many are rheumatoid arthritis. For this reason the therapeutic results achieved by cortisone and A.C.T.H. in our first six cases of ankylosing spondylitis are here recorded.

Assessment of Improvement

Ankylosing spondylitis is in many ways a more difficult condition to assess objectively than rheumatoid arthritis, in which finger-swelling can be a convenient yardstick of therapy (Hart and Clark, 1951). Nevertheless in previous trials we have found patients with spondylitis much less suggestible than those with rheumatoid arthritis, and much less likely to respond dramatically to inert substances under the impression that they were receiving powerful therapeutic agents. We have used in assessment: (1) spinal flexion and extension, as measured by an angled "spondylometer," which, extending from sacrum to cervical vertebrae, eliminates hip movements; (2) simple forward bending which includes hip movement, measurement being taken from finger-tips to the floor at the tip of the big toes; (3) chest expansion, measured in inches at nipple level; (4) vital capacity estimations; and (5) subjective assessment of pain and stiffness by the patient himself, complete normality being taken as zero. Photographic contrast has not been sensitive enough to record small differences, and sedimentation rates have been so erratic as to be entirely unreliable. It will be seen, therefore, that, unlike the ring measurement of finger-swelling in rheumatoid arthritis, there is no absolutely objective measurement in ankylosing spondylitis which cannot be influenced by pain relief and psychological factors.

Case 1

A man aged 26 first had ankylosing spondylitis in 1945 in the lumbar region and the right hip. He was treated as a case of tuberculosis by immobilization in plaster for 10 weeks; but the pains became worse, and on removal of the plaster he was extremely stiff and required the aid of two sticks when walking. During the same period his general health deteriorated and he lost 28 lb. (12.7 kg.) in weight. In August, 1946, deep *x*-ray therapy was given to the right hip without improvement. Pain and stiffness became progressively worse, and in the winter of 1950–1 symptoms were intensified and the left hip became involved, with occasional pains and stiffness in the right shoulder. Extremely painful "muscle spasms" were a feature of the disease.

On admission to the unit in May, 1951, the spine was immobile throughout except for some movement at the atlanto-occipital and atlanto-axial joints. Hips were fixed in partial flexion. *X*-ray films showed poor intercostal expansion and fusion of sacro-iliac, hip, and lumbar and dorsal intervertebral joints. Although he was ankylosed and had a normal corrected sedimentation rate bouts of painful muscle spasm occurred in the back and thighs. Expecting little effect, we gave A.C.T.H. (Armour), 15 mg. six-hourly, intramuscularly, over a period of 17 days. No significant improvement in range of movement occurred and pain increased with this treatment, episodes of muscle spasm becoming more intense and frequent. Subsequently deep *x*-ray therapy was given—1,200 r to each hip and to the sacro-iliac joints. Muscle spasm disappeared for the first time and there was subjective improvement, pain lessening appreciably and well-being increasing.

Comment.—This case once again illustrates the dangers of wrong diagnosis and complete immobilization early in this condition. Although the case was an entirely unsuitable one, A.C.T.H. therapy was given, purely empirically. Attacks of painful muscle spasm, his most troublesome symptom, worsened on this treatment, but were relieved by subsequent deep *x*-ray therapy.

Case 2

A man aged 35 had suffered from ankylosing spondylitis since 1942. He gave the interesting history that when sleeping in an aeroplane on the Berlin air lift he woke up less stiff and with less pain than after sleeping in his normal bed. This history of ease by constant spinal agitation during sleeping hours has been noted also by J. Jackson Richmond (1950, personal communication) in a spondylitic patient sleeping in a small yacht at anchor. Symptomatic ease and measurable improvement followed deep *x*-ray therapy in August, 1948, and February, 1949, different areas being treated on the two occasions. Prior to readmission to the unit in November, 1950, there had been considerable pain in the sacro-iliac, subcostal, cervical, and right shoulder regions, with increasing stiffness and some anterior chest pain. For one year he had had intermittent mild dyspepsia.

Examination on admission revealed limitation of all spinal movement and scattered areas of bony tenderness. Painful haemorrhoids were present. *X*-ray films and tomography showed incomplete fusion of sacro-iliac joints and early longitudinal calcification between vertebrae, but the intervertebral joints were normal. A barium meal revealed a duodenal ulcer. A 10-day course of injections of an inert substance produced no change. A further 10-day course of a substance under trial also brought no improvement. Ten days of cortisone, given intramuscularly (total 1.3 g.), showed an increase of spinal flexion from 17 to 20 degrees, an increase of chest expansion from 1¾ in. (4.4 cm.) at nipple level to 2½ in. (6.3 cm.), but a slight reduction in vital capacity and no reduction of a high blood sedimentation rate. Marked subjective improvement occurred, in that pain and stiffness were much less. No exacerbation of duodenal symptoms occurred.

The patient was unaware of the substances he was receiving, and his observations are therefore of interest. "On

January 2 [his 25th day of injection therapy and 5th day of cortisone] I could literally feel my condition improving hour by hour. I started taking a keen interest in food. Spondylitis, piles, and ulcer pains now suddenly became confined to their own particular sphere. Since then I have felt a great urge for exercise (not physiotherapy !), particularly badminton, and my general condition, both physical and mental, feels as though it has been brought about by a process of rejuvenation rather than by a cure. Since January 2 I have not slept well, and the last three nights have been very wakeful ones, though my mind has been very tranquil. I have not slept in the day-time as usual, as I haven't felt tired enough." Unfortunately injections ceased four days after; so did entries in his diary and all subjective improvement. After discharge in May he was given deep *x*-ray therapy to the dorsal and cervical spine (900 r) as an out-patient, and subjective improvement, though less rapid and dramatic than on cortisone, was much more lasting: the follow-up note on October 17, 1951, read, "Has held improvement gained as a result of radiotherapy."

Comment.—Cortisone gave marked subjective improvement, but little could be demonstrated by measurement, and the improvement rapidly disappeared after treatment ceased. Deep *x*-ray therapy, to painful areas only, produced a less dramatic though much more prolonged effect, improvement being still maintained five months later.

Case 3

A man aged 20 had a four-year history of ankylosing spondylitis. All spinal movement except cervical was restricted; tender areas were present in the left anterior superior iliac spine, left greater trochanter, left lower ribs postero-laterally, and right adductor tubercle. *X*-ray films showed marked involvement of sacro-iliac joints and of both ischial tuberosities. There was slight "squaring" of the bodies of the lumbar spine, and many of the intervertebral articulations were affected. The ribs moved normally on inspiration. Vital capacity was 3,400 c.cm., or 85% of normal. A 10-day course of intramuscular cortisone was given (total 1.3 g.), and subsequently a course of deep *x*-ray therapy, 1,200 r, to the sacro-iliac, lumbar, and thoracic ports. Results are as noted in Table I.

TABLE I.—*Results in Case 3*

	Cortisone*		7 Days Later	After Deep *X*-ray Therapy
	Before	After		
Pain	100	30	100	50
Stiffness	150	50	100	50
Forward flexion ..	18 in. (45·7 cm.)	13 in. (33 cm.)	16½ in. (42 cm.)	14 in. (35·6 cm.)
Spondylometry ..	24°	32°	21°	33°
Chest expansion ..	3½ in. (8·8 cm.)	4 in. (10 cm.)	2 in. (5 cm.)	4 in. (10 cm.)
Vital capacity ..	3,400 c.cm. =85%	3,620 c.cm. =91%	3,320 c.cm. =83%	3,800 c.cm. =96%

* 1·3 g. given intramuscularly over 10 days.

Comment.—It will be seen that assessments of improvement by the medical attendant and the patient were approximately equal on cortisone and deep *x*-ray therapy, but, while the effect of the former wore off within five days of stopping treatment, the increase in spinal flexion has been maintained since *x*-ray therapy, the figures being 43 degrees two months after therapy and 32 degrees seven months after. Improvement at this time was still maintained, pain and stiffness being much less than before treatment.

Case 4

A male aged 41 had suffered from ankylosing spondylitis for less than one year. Morning stiffness and pain were present in the right foot as well as the sacro-iliac and cervical areas. Spinal flexion was reduced to 37 degrees and extension to 5 degrees (total range 42 degrees), chest expansion was 1¼ in. (4.4 cm.) at nipple level and vital capacity 3,480 c.cm. (73% of normal). *X*-ray films and tomographs showed early changes of ankylosing spondylitis in both sacro-iliac joints; no other changes were present in the spinal column. Osteoporosis of both feet was present, with some erosion of the heads of several metatarsals on the right side. The patient was an excellent witness, and kept a careful record of his impressions day by day. Looking through these, it is apparent that on all forms of treatment, including administration of inert substances, a steady all-round improvement took place (Table II), except in the

TABLE II.—*Results in Case 4*

	Before Treatment	After A.C.T.H.*	After Deep *X*-ray Therapy
Pain	236	155	101
Stiffness	236	121	77
Forward flexion ..	5½ in. (14 cm.)	4 in. (10 cm.)	0 in. (touching floor)
Spondylometry ..	51°	47°	60°
Chest expansion ..	1¾ in. (4·4 cm.)	2 in. (5 cm.)	2 in. (5 cm.)
Vital capacity ..	3,480 c.cm. =73%	3,600 c.cm. =76%	3,700 c.cm. =78%

* 645 mg. given over 14 days six-hourly.

right foot, which remained painful and stiff throughout a 12-day course of A.C.T.H., 70 mg. being given on the first day in six-hourly dosage, followed by 10 mg. six-hourly for a further 11 days, and a course of deep *x*-ray therapy applied to the spine. Only when a small (500 r) dosage of deep *x* rays was given direct to the foot did improvement occur locally.

Comment.—A.C.T.H. in small dosage had no dramatic effect on spinal symptoms: steady improvement took place throughout his stay, irrespective of the form of treatment given. Pain, stiffness, and tenderness in the right metatarso-phalangeal area remained an annoying drawback to progress when spinal symptoms had largely abated. A.C.T.H. and spinal deep *x*-ray therapy had no effect; local deep *x*-ray therapy in small dosage produced an immediate response, which has been maintained to date (five months later).

Case 5

A man aged 23 with a history, starting in 1947, of swelling of the left knee and stiffness of the lumbar spine, was diagnosed in 1948 as a case of ankylosing spondylitis and was put into a plaster jacket. In this he became more stiff and the disease progressed and extended, the hips becoming involved. He was removed from the jacket and was given exercises and deep *x*-ray therapy.

On admission in March, 1951, his spine had a range of 34 degrees. Movements of both hips were restricted, but

TABLE III.—*Results in Case 5*

	A.C.T.H.*		3 Days Later	After Deep *X*-ray Therapy
	Before	After		
Pain	70	85	85	80
Stiffness	85	80	90	75
Forward flexion ..	10½ in. (26·6 cm.)	10½ in. (26·6 cm.)	10½ in. (26·6 cm.)	10 in. (25·4 cm.)
Spondylometry ..	38°	43°	40°	40°
Chest expansion ..	1½ in. (4·4 cm.)	1½ in. (3·8 cm.)	1½ in. (4·4 cm.)	1½ in. (3·2 cm.)
Abduction malleoli	38 in. (96·5 cm.)	41 in. (104 cm.)	38 in. (96·5 cm.)	39 in. (99 cm.)

* 625 mg. given over 15 days six-hourly.

less so than when first seen in 1948. The left knee was slightly swollen, and tender areas were present in the lower ribs, coccyx, and sacrum. *X*-ray films showed ankylosis of sacro-iliac joints and most of the lumbar intervertebral joints. The patient was given routine exercises and allowed full mobility. Control injections were given for 13 days, followed by a 15-day course of A.C.T.H., 10 mg. six-hourly

intramuscularly. Subsequently deep *x*-ray therapy was given —900 r to the sacro-iliac region, 1,000 r to the right hip. He was discharged four days after *x*-ray therapy was finished, measurements immediately before and after each form of therapy being unchanged (Table III) and no subjective improvement having being noted. No diminution in knee-swelling and no reduction in bone tenderness occurred.

Comment.—No improvement whatsoever was noticed with either control or A.C.T.H. injections, and there was no immediate response to deep *x*-ray therapy.

Case 6

A woman aged 40 had developed acute diffuse back pains suddenly in January, 1951, with fever and general malaise. By the middle of the afternoon she had to retire to bed. Next day her back "felt like a ramrod" and severe spasmodic pain was present. Two days later her knees became swollen. Salicylates had no effect. She then remembered she had had two similar bouts at the age of 19 and 23 years, both being characterized by severe pain and stiffness of the back and swelling of the knees, as in her present bout. Since these two attacks she had been perfectly well, though her back became very painful if traumatized only slightly.

On admission on January 17, 1951, fever was present. She looked ill and was in great pain. Her spinal movements were restricted, her chest expansion markedly so. Both knees were swollen with fluid and were stiff and painful. Double-exposure *x*-ray films showed very limited rib movement with large diaphragmatic excursions. The sacro-iliac joints were eroded, with marginal ilial sclerosis, the picture being that of ankylosing spondylitis. Diarrhoea was present, but no pathogens could be isolated. Blood cultures and agglutinations were negative. Vital capacity was reduced to 50% of normal. Legs were splinted, and after a week's observation period, during which temperature and pulse failed to abate and the general picture remained unchanged, A.C.T.H., 15 mg. six-hourly, was started. On the first day fever abated, and within 48 hours pains and stiffness diminished, the legs appeared less swollen, and appetite and general well-being were much improved. Treatment was continued for a month, the dosage gradually being reduced; in the last two days she received only 16 mg. a day (4 mg. six-hourly). There was no rebound when therapy was discontinued. After eight days, when the dosage of A.C.T.H. was reduced to 32 mg. daily, a low fever and tachycardia returned for a time. Three days before A.C.T.H. was discontinued vital capacity had risen to 65% of normal. At her last out-patient attendance in September, although vital capacity was 68% of normal, *x*-ray films showed rib movement restricted as before. Overall improvement had been maintained, swelling of knees had disappeared, and she was working in a school.

Comment.—This acute episode in a female patient with spondylitis responded satisfactorily to A.C.T.H.; there was no rebound after gradual withdrawal of the drug, and in an eight months' follow-up improvement has been maintained. Therapeutic response has apparently run into natural remission.

Comment

It is fair comment that at least one of these patients could not be expected to give good results with A.C.T.H. or cortisone therapy, and that the more early acute cases did benefit, although dosage in all cases was low and periods of administration were short. In Case 6 improvement rapidly initiated by A.C.T.H. has been maintained and a natural remission appears to have set in with the discontinuance of treatment. In this patient, the only female of the series, two less acute episodes many years previously had subsided similarly, leaving her symptom-free for years. The effects of A.C.T.H. or cortisone on these six cases may be stated thus:

Case 1 (advanced case).—Pains worsened on therapy, painful spasms becoming worse. Deep *x*-ray therapy subsequently lessened pain.

Case 2.—No measurable improvement. Symptoms were relieved by cortisone, and also, less dramatically but over a much longer period, by deep *x*-ray therapy.

Case 3.—Measurable and symptomatic improvement occurred equally with both cortisone and deep *x*-ray therapy, the former lasting only for the duration of treatment, the latter many months subsequently.

Case 4.—Gradual improvement occurred on all forms of treatment, including the administration of inert substances. Cortisone failed to affect peripheral pain and stiffness, which responded to a small dose of locally applied deep *x*-ray treatment.

Case 5.—There was no immediate measurable or symptomatic response either to cortisone or to deep *x*-ray therapy.

Case 6.—Improvement occurred rapidly on A.C.T.H., natural remission setting in early.

It seems reasonable, with supplies of these drugs limited as they now are, to restrict their use to acute painful episodes in cases of spondylitis. Such episodes may be prostrating at the time, and few things cause more severe diffuse pain. Deep *x*-ray therapy has in our hands proved most effective within seven to ten days of starting treatment in such cases in the past, but A.C.T.H or oral cortisone obviously can play a part here in controlling acute symptoms and so enabling other forms of therapy to be instituted.

Ankylosing spondylitis is a disease which lasts for many years or the rest of the patient's lifetime; one is never sure that even a prolonged remission of many years will be a permanent one. Most patients are only moderately incapacitated, and the vast majority are at work and earning their living. A.C.T.H. or cortisone therapy can be applied only over a relatively short period in the life history of the disease. Case 6 seems eminently suitable for two reasons: (1) the acute prostrating episode demanded immediate pain-relieving effective treatment, and (2), the patient being a female of child-bearing age, deep *x*-ray therapy held certain hazards.

Even if supplies of A.C.T.H. and cortisone were completely unrestricted it is very arguable if they would be more than short-term weapons in the treatment of ankylosing spondylitis, for they are in no sense curative. In spondylitis stiffness is a prominent symptom, and in all but early cases this is, in part at least, due to irreversible change. Bony tenderness in our cases has not, on the short courses of treatment given, been relieved by A.C.T.H. or cortisone as it has been by deep *x*-ray therapy. Exercises, postural drill, and treatment of postural defects remain as necessary as before. The basic treatment of this condition remains unchanged, though a potent short-term weapon is now available for more acute episodes.

Summary

Six cases of ankylosing spondylitis treated with short courses of A.C.T.H. and cortisone are described. Reasons are given for regarding the present current therapy as unchanged in this disease, although a potent weapon for short-term treatment of acute painful episodes has been placed in our hands.

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A PSYCHIATRIC STUDY OF SIX CASES OF INFANTILE ACRODYNIA

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In a review of infantile acrodynia, one of us (Leys, 1950) commented on the similarity between acrodynia and the clinical picture described by Spitz and Wolf (1946) in children deprived of their mothers. Without insisting on an absolute parallel, he suggested that there were grounds for investigating the emotional state of cases suffering from acrodynia. While to the perceptive and experienced eye the clinical picture presented by emotionally disturbed infants shows many variations, these must be subjectively interpreted and are open to dispute. It is a truism of paediatric or child psychiatric practice, however, that the emotional state of the mother profoundly influences the emotional state of the child. This was described thirty years ago by Hector Cameron (1919) and has been the subject of many studies and observations. Thus Levy (1943) states: "It is generally accepted that the most potent of all influences on social behaviour is derived from the primary social experience with the mother. . . . His outlook on life, his attitude towards people, his entire psychic well-being, his very destiny is presumed to be altered by the maternal attitude." For the purpose of this report it is unnecessary to enter into discussions on how maternal attitudes influence the emotional state of the child. It is, however, well within the observation of child psychiatry that a child may experience the result of emotional stresses that the mother herself fails to recognize.

In view of these considerations it was arranged that, in each case of acrodynia met with, the family background of the child's life should be investigated, as is done with psychiatric problems. This in practice resolved itself into the psychiatrist interviewing the mother, or both parents, while the paediatrician treated the child. In two of the cases the parents themselves referred other children of the family who suffered from psychiatric disability, so that our knowledge of the family situation was much increased.

Treatment and prognosis are not discussed here; the symptoms and signs of acrodynia cleared up in every case.

Case 1

A girl, admitted at 15 months, had been a model baby. At 8 months she had suffered from constipation and a prolapsed rectum. For two months before admission she had had "teething rashes," treated apparently by exclusion of cream, butter, cod-liver oil, and vitamin preparations from her diet. When seen at 15 months the child was described as listless, off her food, sleeping badly, whimpering, and wanting to be lifted. She sweated a lot, and her hands in the past two weeks had become pink. On examination she was pale, had obviously lost weight, resented being touched, and tended to kneel with her face buried in the pillow (photophobia). She was otherwise apathetic, with hypotonic limbs. Tachycardia (175) and raised B.P. (174/120) were present. Her hands and feet were red and cold. The liver was enlarged below the costal margin. There was some sweat rash over the rest of the body.

The mother, a pleasant young woman, had been a clerk before marriage and sang in the church choir. Her mother was a worrier and was strict in her religion; her father was healthy and easygoing. The patient's father, aged 23, also a clerk, was quiet but with a temper. His mother was much concerned with what people think; his father was easygoing. The parents were engaged when the child was conceived, and both grandmothers were greatly exercised over the scandal in two respectable families. The marriage was hastened on, and the couple were found rooms in the house of the paternal great-grandmother. Here they found conditions impossible; they were limited in coal, and were not allowed to make any noise at night or before 10 in the morning. The mother was forbidden to do washing in the rooms, as it would make the walls damp. She said that caring for the child in these conditions got her nerves "in a state." She felt upset and fed up; nothing was right, and she was inclined to snap at everyone. She attended the doctor for her nerves. It was in this situation that the child's symptoms developed.

When interviewed the mother seemed a pleasant, competent young woman; the circumstances of her marriage were still a preoccupation, and after "confessing" them she spoke of her concern that the child would one day find out.

Comment.—In this case the child was conceived against the wish of the parents and precipitated the marriage. Its presence was associated with much self-reproach to the mother. In addition it had created great material difficulties for her, and she had reacted to these stresses with nervous symptoms at the time of the illness

Case 2

This child was admitted to hospital at 22 months. Birth had been normal; she was breast-fed for two weeks and was put on the bottle when her mother got up. Physical development had been normal up to the onset of the illness, but the child had rocked her cot and when ill she had banged her head. She still picked her woollens and ate them at the time of admission. The normal physical progress had been interrupted two months before admission. The child was fretful and cried when cutting teeth, and did not improve when the teeth came through. She stopped talking, was whining and fretful, slept badly, had loss of appetite, and sweated; her hands were red, hot, and moist, and her feet cold; she tended to constipation and showed doubtful photophobia. Her mother described her as "limp." At the time of admission there had been some improvement, but the child was whining and miserable, was unwilling to sit up, had acrocyanosis of hands and feet, showed tachycardia (140+), and had raised B.P. (145/95). Tuberculosis, of which there was a history on the paternal side, was excluded. The diagnosis of acrodynia was made.

A family background of stress was revealed. The mother, aged 36, grew up in an unhappy home with shortage of money. The maternal grandfather suffered from bronchitis. The maternal grandmother went out to work. The mother as a girl had resented having to work in the house. When she was 17 the maternal grandmother was killed in an air raid and she thereafter kept house for the maternal grandfather and a maternal uncle. She found herself ignorant domestically and was filled with self-reproach at her previous attitude to her mother. She married at 20. The father, a bus conductor, at the time of the child's admission aged 36, was a heavy, anxious, down-in-the-mouth individual, a non-smoker and non-drinker.

The eldest child, aged 6, showed some personality disturbance referable to parental anxiety and mishandling. He was timid, withdrawn, a "bundle of nerves," would not go out, had attacks of vomiting, became agitated on separation from the parents. He was brought for treatment. The second child, aged 3, had been in hospital suffering from strangulated hernia. The patient, the third child

had been unwanted, and represented a failure in birth control. The mother described herself as tired and "so depressed I can hardly breathe" since she knew she was going to have this child. She had sickness all through this pregnancy, though not with the other children. Since this child had gone into hospital she had suffered from headaches. In view of the failure of contraception, with the consent of the father, and supposedly on the advice of the family doctor, sexual intercourse between the parents had ceased with the birth of this child. The home was good from the point of view of space and activity.

The mother was a pleasant drawn-looking woman, tired, and attending the family doctor for "nerves," but formally good with the children, manifesting no lack of affection.

Comment.—The factors of stress appear to be in the mother's history, in the determination and failure to limit the children to two, and in the disturbed marital situation. The severely disturbed eldest child and the patient's rocking, head-banging, and picking suggest lack of maternal warmth and over-restriction. The patient was confessedly an unwanted child, and the mother had shown psychosomatic symptoms from the time of conception.

Case 3

This patient was admitted to hospital aged 9 months. The history was of a normal pregnancy and birth. She was breast-fed for four to five months and weaned from the breast without difficulty. Previously healthy, the child about two months before admission lost interest, cried a good deal, became limp, slept badly, lost appetite, and lost 2 lb. (0.9 kg.) in weight. A month before admission her hands and feet had become swollen and cold. A week earlier a rash had developed on the body and the child had a blister on one toe. On examination she was irritable and tearful, with a flushed facies. Hands and feet were red, cold, and sweating, there was a papular rash on the trunk, and some of the skin creases were broken. Moderate tachycardia was present (160), and the blood pressure was 140/100. Hypotonia was marked, and the child was found to be running a slight evening temperature. Infantile acrodynia was diagnosed.

The mother, aged 21, a shorthand-typist, had married at 19. The maternal grandmother was highly strung, and the grandfather had been disabled in the first world war. The father, aged 30, was an electrician of healthy parentage. The marriage had been happy, but circumstances were difficult. They had two rooms, but the children arrived too quickly; the eldest was 2 months old when the patient was conceived, despite attempted birth control. "I did not want her." The landlord, wife, and two children also lived in the house. "They don't want children crying all night." They kept bees outside her window, which frightened her, and she continually dashed out to take the child in when they were disturbed. The dog frightened her and the children. The mother had felt overwrought since the birth of the patient, who had cried at nights; the mother had been both irritable and self-reproachful. She had difficulties with the landlady, and was unable to keep the place straight or work a shared kitchen. Sexual relations had been unsatisfying to her. She was inclined to blame the husband for this, but her own fear of conception had probably been the main factor. In the month before the child's illness began the mother said she had become hysterical and had attacks of screaming and weeping, for which she attended her doctor. Seen with the child, she held her with kindness and care.

Comment.—This child was also conceived contrary to the parents' wish. The material difficulties for the mother were great and were aggravated by the child's birth. The child's illness had developed when the mother was attending her doctor for acute nervous symptoms.

Case 4

This child, a girl aged 14 months, had been born at home and had been breast-fed for five months. Her maximum weight was 24 lb. (10.9 kg.) at 12 months. At the time of examination it was 19 lb. 10 oz. (8.8 kg.). She was said to be "feverish" when cutting each tooth. Four weeks before examination she had begun to cut her canines. She had been off her food, had vomited, was restless at night as with her other teeth, but now showed complete refusal of food, and became very passive, although restless and making chewing movements. She refused to be bathed or dressed. On examination she lay quiet in her parent's arms and resented interference. There was gross subcutaneous wasting, mainly over the abdomen, but also in the limbs, which were hypotonic. There was no hypersensitivity or photophobia at the time, but later some evidence of hyperaesthesia. Her heart rate was 160. The systolic pressure (narrow band) was >140. She could stand and walk. Infantile acrodynia was diagnosed.

The family situation and the mother's health were much disturbed. She had been restricted by her own mother, who had disliked her, and she was attached to her father. At 20 she had had a breakdown with attacks of screaming while in the W.A.A.F., after she had picked up a dead baby in an air raid. The father, a student, came of excitable parents. An elder child was born in 1943. The patient had been born when the husband went back to student life after the war. They occupied a small flat and had an "awful" landlady. The husband was studying, and the children had to be kept quiet in the evening, while the baby shared their room. During this time the older child attended a child guidance clinic for pilfering and restlessness, and the mother attended a psychiatrist for anxiety symptoms, phobias, and hysterical manifestations. They had just moved out of this situation when the child's illness began. Subsequently both the elder child and the mother received treatment again.

Comment.—The mother's bitterness against the grandmother was increasingly revealed as creating difficulties for her in a maternal role. This was regarded as the essential element in her problems with her children, though the factor of restriction and crowding did come in. While the mother accused herself of irritability with the children, particularly the eldest, she handled the patient with apparent affection.

Case 5

A girl just over 12 months old was admitted to hospital with a history of a normal maternal first pregnancy and healthy delivery. She had always been a light sleeper. She was breast-fed for only three weeks and then put on the bottle, making a steady gain up till about two months before admission.

At this time she began to refuse feeds and was disinclined to sleep. She would lie and whimper, although yawning all the time. She would play if taken into the parents' bed and eventually slept. When transferred to the care of the maternal grandmother for a few days she tended to improve. At 9 months she could stand and crawl, but had made no progress since and lay passive. She now liked to be cuddled, although initially had shown little response to it. In two months she had lost 2 lb. (0.9 kg.) in weight. She sweated a lot in sleep.

On admission she resented being handled, and her appetite and sleep were poor. There was hypotonia, with some acrocyanosis of hands and feet. The heart rate was 120–130, and B.P. 110/60. Her temperature was normal, as were her gums and mouth. *X*-ray films of the chest were negative, the Mantoux test was negative, and the blood picture and white cell count were normal. She was considered to be a mild or doubtful case of acrodynia.

The background of stress in the child's life was acute. The mother, aged 28, had a stable family background. The

father, aged 35, was a cheerful individual. The paternal grandmother was, however, a dominating woman, and her husband had to conform. The child's parents had been married for two years. They lived in two rooms in the house of the paternal grandparents. Friction had quickly developed between the mother and her mother-in-law, and was aggravated after the birth of the patient. The two women had ceased to speak to each other. One of the rankling accusations made by the grandmother was that the mother did not love her child. Relations between the parents were also strained because the mother had refused sexual intercourse since the birth of the child, as she refused to take the risk of another pregnancy in these circumstances. Both refused to undertake birth control. She felt also that it was the duty of the father to provide her with an adequate home, and her determination had a punitive element in it.

The mother felt that her initial easy disposition had gone and that she was becoming spiteful, irritable, and cross with the child. It was in this situation that the symptoms complained of developed.

The mother was, on interview, a pleasant woman and did not show formal mishandling of the child.

Comment.—The factors present appear to be acute maternal stress related to the housing position, her mother-in-law, and her marital relations. This was so marked as to cause her to report a change in her personality. The grandmother's accusations that she did not love her child may be important.

Case 6

A boy aged 13 months was admitted to hospital. Pregnancy and labour were reported to have been normal except that the mother had oedema in the latter months. He was breast-fed, and was not weaned until 11 months. At 9 months he had had mild whooping-cough. At this time he had weighed 16½ lb. (7.5 kg.); his weight of 18 lb. (8.2 kg.) on admission almost certainly represented a loss of weight. About a month before admission he had begun to refuse feeds, became cross and restless, showed dislike of the light, and developed a fine rash on the body. On examination this was found to be a characteristic but not very severe case of acrodynia, with photophobia, tachycardia, swelling of the hands, hypotonia, moodiness, difficulties with feeding, and a tendency to sweat. On admission he was noted to be rather dirty and uncared for.

The mother, aged 41, a stout, apparently genial, slightly slatternly-looking woman, said she was "always tired"; she also said she was sometimes depressed, but made light of this. She herself had been adopted after the death of her father, and spoke of the maternal grandmother with detachment and of the adoptive parents with affection. The father, aged 41, suffered from duodenal ulcer, and was irritable and moody. There was nothing significant in the paternal grandparents.

The patient was the seventh child, and five older ones were still at home. The father had to work overtime to keep going financially, and gave the mother £5, in addition to which she had an allowance of 25s. weekly. The home was a house with six rooms and a kitchenette and bathroom. The mother indicated that she used to take a pride in keeping the house nice, but no longer did so, and confirmed that she had not wanted the child, and, indeed, half-hearted birth control had been practised since the third child; she did, however, say that it was all right when they were there.

Comment.—Here the factors of the child's being initially unwanted and some degree of stress were both present. The mother herself suffered from continual tiredness and was occasionally depressed. It may be said that the findings in this case were compatible with rather than strikingly illustrative of the elements found in the other cases in the series.

Observations

The evidence of stress in the family situation of these cases is striking, and indeed more obvious than that in the family of many children attending the psychiatric clinic.

In Cases 1, 2, 3, and 4 the mothers were actually attending the family doctor or a psychiatrist for nervous symptoms when the child developed the symptoms. In Cases 5 and 6 the mothers respectively complained of irritability and spitefulness and of tiredness and depression.

In a consecutive series of 30 cases of manifest psychiatric symptomatology referred by the paediatrician to the psychiatrist in the same clinic, maternal symptomatology of this kind was present in only eight cases (Prince, 1951).

In Cases 1, 2, 3, and 6 the children were the result of failure of contraceptive methods and their conception was unwanted. It may be important that in Case 5 the paternal grandmother accused the mother of not loving the child. In Case 4 the mother, who subsequently received psychotherapy, revealed severe emotional difficulties in relation to her children. All these mothers, with the possible exception of Case 6, were, however, formally good mothers who showed care for the welfare of their children. Nevertheless, it is a familiar experience in child psychiatry to meet mothers who, though overtly affectionate, cannot show complete maternal warmth to their infants. The other element present with surprising consistency was the need to restrict the child's crying or activity. This was demonstrably present in Cases 1, 3, 4, and 5, while in Case 2 the child's rocking, head-banging, and picking are signs usually associated in the mind of the psychiatrist with lack of maternal warmth and over-restriction.

In these cases, therefore, we would say that the essential element present was some degree of emotional deprivation associated with the child's being unwanted, and with other maternal stresses and some evidence of over-restriction. This occurred in families reasonably well disposed towards the children. No effort has been made to present more than the manifest situation, and psychodynamics are not discussed.

The series is small, so that an element of coincidence cannot be excluded, but it does contain all cases of acrodynia which attended a paediatric clinic at the time, and there was no selection of cases on any basis other than the symptoms of acrodynia.

In our view the evidence is sufficient to warrant extended observations of the emotional and family background of infants suffering from acrodynia.

Summary

Six cases of infantile acrodynia are described in their family setting and environment. In each case evidence is offered that the child suffered from emotional deprivation, and that the mother was herself suffering from psychiatric ill-health at the time of onset of the child's illness. The circumstances were conducive to restriction of the child.

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AMINO-ACIDURIA IN GALACTOSAEMIA

BY

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During recent years the condition of galactosaemia has been recognized more frequently, but the total number of cases recorded in paediatric literature is still very small. Much interest has been aroused by this rare metabolic disorder because of the satisfactory results following appropriate treatment and because of the serious consequences of misinterpreting the clinical picture. Although diagnosis and treatment are now on a firm basis, the pathogenesis and the nature of the metabolic derangement are not yet fully understood.

Two Recent Cases

During the past four months two infants have been observed who presented the classical symptoms and signs of vomiting, failure to thrive, transient jaundice, enlargement of the liver, and frequent loose stools. One, who has been studied from the first days of life, developed central polar cataracts at the age of 4 weeks; these have subsequently regressed. Examination of the urine in each case showed the presence of a reducing substance which was identified both chemically and by chromatography as galactose. The galactose-tolerance tests in both infants were grossly abnormal, showing an initial galactosaemia, a steep rise of the galactose blood levels, and a slow fall over several hours.

Further evidence supporting the diagnosis was obtained by the therapeutic test of omitting milk from the diet; this produced definite improvement in the infants' condition and led to the disappearance of galactose from the urine.

Because of the hepatomegaly in the first infant the possibility of an amino-aciduria as a result of liver damage was considered and studies of the urine were undertaken. Because of the unusual findings these studies were repeated with the second infant.

Urine Chromatography

One-way paper chromatograms were made on as many specimens of urine as possible, the volume of urine containing 250 μg. of total nitrogen being taken for each analysis. Both cases consistently showed an excessive amino-aciduria when on a milk diet but not when on a diet from which milk was entirely absent. The picture reappeared when 2 g. of galactose a day was added to the milk-free feeds. It also followed a galactose-tolerance test.

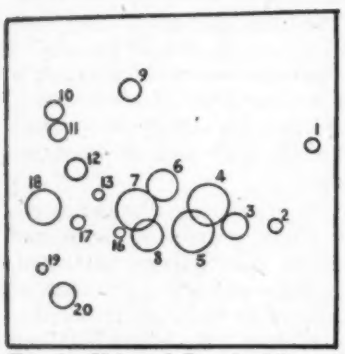

FIG. 1.—Urine of Case 1 while on a milk diet. Note the large number of amino-acids, some of them in large quantities.

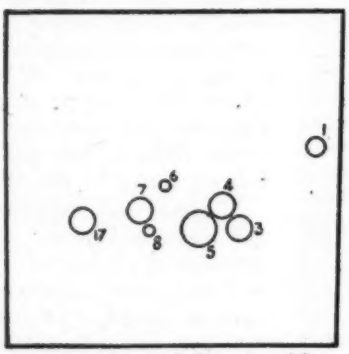

FIG. 2.—Urine of Case 1. After four days on a milk-free diet. All the amino-acids have decreased in quantity—some have disappeared altogether. The excretion is still, however, slightly abnormal.

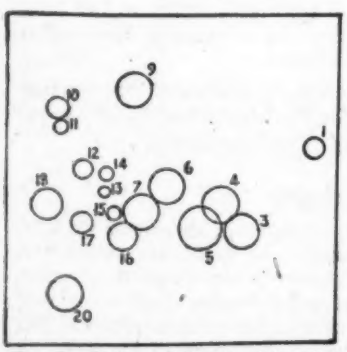

FIG. 3.—Urine of Case 2 while still on a milk-containing diet. The characteristics of the amino-aciduria are very similar to those shown by Case 1.

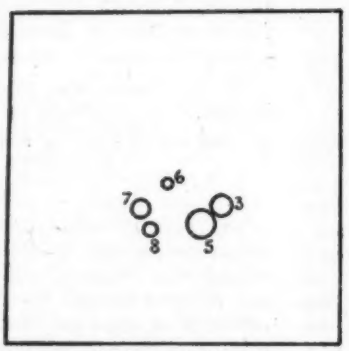

FIG. 4.—Urine of Case 2 on a milk-free diet.

Identification of Spots.—1, Cysteic acid (from cystine); 2, aspartic acid; 3, glutamic acid; 4, serine; 5, glycine; 6, threonine; 7, alanine; 8, glutamine; 9, tyrosine; 10, phenylalanine; 11, leucine; 12, valine; 13, alpha-amino-*n*-butyric acid; 14, methionine sulphone (from methronine); 15, histidine; 16, citrulline; 17, beta-amino-*iso*-butyric acid; 18, methyl histidine; 19, arginine; 20, lysine.

In order to identify the amino-acids more definitely two-way chromatograms were made on urines selected on the basis of the one-way chromatography, using phenol/collidine and phenol/tetrahydro furfural alcohol as pairs of solvents and again taking the volume of urine containing 250 μg. of nitrogen. These chromatograms confirmed the previous findings and allowed of a provisional identification of all the amino-acids present. The details of the amino-acid pattern were similar in both cases. Descriptive diagrams of two chromatograms of the urine in each case are shown in Figs. 1, 2, 3, and 4. The amino-acid spots are shown in their usual positions on an actual chromatogram. They are drawn in the form of circles, the relative sizes of the circles giving some indication of the strength of ninhydrin colour and hence of the quantity of each amino-acid present. The urine is assumed to have been placed at the right-hand bottom corner. Phenol has been run as first solvent from right to left followed by collidine in an upward direction.

It can be seen that on the milk diets a definite amino-aciduria was present, involving a large number of amino-acids. A two-way chromatogram of the first case after the administration of galactose showed practically the same pattern as the original urine. It was noted that the pattern obtained was different from any pattern seen in cases of extensive liver damage in infants of the same age.

Chromatographic Report

It was felt that confirmation of the amino-acid pattern should be obtained, and Dr. Dent, of University College Hospital, kindly examined specimens. He reported as follows: "Review

of all the chromatograms leaves no question that there is a gross amino-aciduria associated with the galactosuria, which rapidly becomes more normal under treatment with the milk-free diet. The especially unusual characteristics (as against those of the already known amino-acidurias) are the disproportionately large quantities of serine, threonine, methyl histidine, lysine, and tyrosine. It could be that this pattern is specific for the disease. Of especial interest is the fact that the common liver diseases, so far as they have been investigated, display urine amino-acid patterns quite different from those shown by these two cases (Dent and Walshe, 1951). On the other hand, the pattern shows some resemblance to that occurring in the renal amino-acidurias, especially that of Wilson's disease."

Discussion

Pathological excretion of amino-acids in urine has recently been reviewed by Dent (1950, 1951), and it appears that there are two possible mechanisms by which this may occur. The first is the "overflow" mechanism whereby the excretion is the result of a raised plasma level; this occurs to varying extents in both acute and chronic liver disease and in phenylketonuria. The second is a true "renal" mechanism whereby the excretion occurs in the presence of normal plasma levels, presumably as the result of a lowered kidney threshold —that is, raised clearance; this occurs in cystinuria, in the Fanconi syndrome, and in Wilson's disease, all of which have a genetic background. There is also an acquired form of renal amino-aciduria which occurs occasionally as the result of the action of poisons such as lead and uranium on the renal tubules.

No reports have as yet appeared in which a disorder of amino-acid metabolism has been implicated in galactosaemia, but it is possible that this amino-aciduria may be specific and an expression of a "renal" mechanism.

It is hoped to publish the results of further work on these lines in the near future.

We are grateful to Dr. C. E. Dent and his assistant, Miss Dorothy Fowler (University College Hospital Medical School), for their generous help with the sugar and amino-acid chromatography and its interpretation; to Miss Jean Summerscales for her assistance in the chemical identification of the galactose; and to Professor Wilfrid Gaisford for his interest and criticisms.

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The Central Council for the Care of Cripples recently produced a *Summary of Legislation and Directory of Organizations for the Care of the Physically Handicapped* (Heinemann Medical Books, price 5s. 6d.), which, in spite of its unwieldy title, is a useful little book of over 100 pages which should be close to the hand of everyone, medical or lay, concerned in the treatment and care of the disabled or crippled. The addresses and functions of many local voluntary societies are included, as well as clear summaries of the provisions of the National Assistance and National Health Service Acts, and other forms of Government aid. There is also a section on the training of orthopaedic nurses and welfare workers as well as of the handicapped themselves.

EXTENSIVE RESECTION OF THE SMALL INTESTINE

A SHORT REVIEW, WITH TWO NEW CASES

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Resection of a large part of the small intestine is called for infrequently and usually unexpectedly. The occasion may be an emergency operation for adhesion obstruction, strangulated hernia, mesenteric vascular occlusion, or mesenteric injury. Less often the indication is widespread tuberculous or other disease of the small intestine, while occasionally it is malignant disease or a benign tumour involving the mesentery. In any case, the need for so drastic an operation has seldom been foreseen and a decision has to be made on the spot. Textbooks on operative surgery give little information, and although many articles on this subject have been published it is still not easy to find out what risk there is of serious impairment of health after an extensive resection. The satisfactory results in the two cases here reported and a review of some of the literature have considerably increased my optimism with regard to this operation.

Extent of Removal

It is true that in most cases the amount of bowel removed is decided by the disease rather than by the surgeon, but even in these there is sometimes room for judgment in deciding whether an extra foot or two of bowel is better removed or left behind. In a minority of cases the extent of removal is far more a matter for individual opinion. The surgeon's decision on how far he should jeopardize the patient's future health by increasing the scope of the operation must be based on his knowledge of the likely effects of removing a large part of the small bowel. If they were to be almost inevitable chronic invalidism, diarrhoea, and misery, then he would serve his patient best by conserving as much as possible. If he knew that several feet more or less would make little difference as regards future health, he would plan the operation accordingly, for long resections are no more difficult or dangerous than short ones.

The case records surveyed support the view that resections of up to one-half of the small intestine are not followed by serious metabolic disturbance. When they exceed three-quarters, then serious metabolic disturbance is probable but by no means certain. There is no clear indication whether resection from the proximal or the distal end is likely to have the greater effect. In practice most massive resections are distal, and the bowel remaining is jejunum. This would be expected from a consideration of the blood supply, as well as from the greater liability of the distal bowel to disease generally and to gangrene from mechanical causes.

A resection of 6 ft. (1.8 m.) is taken by most authors as the minimum qualifying for the term extensive or massive. When less than this is removed the problem of later metabolic upset, in the absence of other disease, never seems to arise. One patient of Jerauld and Washburn's (1929) had only 6 ft. (1.8 m.) resected for polyposis and later had diarrhoea after milk or anything containing fat, but there may well have been polyposis of the

remaining bowel. In their other case the distal 19 ft. (5.8 m.) was resected for mesenteric embolism, leaving 10 ft. (3 m.), and the patient gained weight and was perfectly well two and a half years later. Comparatively few of the cases reported are as informative as this one about the late effects of resection. Most reports give no indication of how much or which part of the small bowel remained; in a few some chronic disease such as tuberculosis makes it impossible to regard the patient as having merely a shortened intestine, and many were followed for a few weeks only. For one or more of these reasons most of the case reports studied do not help greatly in trying to correlate the extent of removal with the late result.

However, the following cases of resection for conditions which would be expected to leave a shortened but otherwise healthy bowel are worth noting. Littlefield (1919) resected the proximal 13 ft. (4 m.), leaving only 6 in. (15 cm.) of jejunum and 4 ft. 1.2 m.) of ileum: the patient was in good health three months later. Sinclair (1924) resected the middle 12 ft. (3.7 m.), leaving several feet above and below, with perfect health three years later. Brenizer (1929) removed the distal 9 ft. (2.7 m.), leaving 6 ft. (1.8 m.), with good health a year later. Holman (1944) removed the distal 19 ft. (5.8 m.), leaving a few feet only, with good health one and a half years later. Cosh (1944) reported a death from diarrhoea and inanition eight months after resection of an unknown length but with only 3 ft. (0.9 m.) of jejunum remaining. Cogswell (1948) resected the distal 10 ft. (3 m.), leaving only 14 in. (36 cm.) of jejunum, with fair health but some diarrhoea six months later. These are representative cases, selected for mention because the reports of them are complete and readily accessible.

Other cases, in which it is not stated how much bowel remained, but with a reasonably long follow-up period, include resections of 11 ft. (3.4 m.) (Turck, 1914), 10 ft. (3 m.) (Turner, 1937), 8 ft. (2.4 m.) (Prioleau, 1944), and 7 ft. (2.1 m.) (Wood, 1920; Watson, 1923), all in good health two or more years later. The loss of 12 ft. (3.7 m.) resulted in poor health and diarrhoea at two months (Brougham, 1907) and at four months (Prioleau, 1944), but in good health with only occasional diarrhoea at 10 months (Addison, 1917). From these and other accounts it seems that diarrhoea in the early weeks is common after the longer resections, with a strong tendency to improve as the months pass. Weight loss, as would be expected, accompanies the diarrhoea and recovers with it. Tetany has occurred in several cases.

Results in the Literature

Collected series from the literature have been published from time to time. Flint (1912) presented 59 cases and Haymond (1935) no fewer than 257. Haymond gives many references, and includes tables of pathology, age, sex, length of resection, type of anastomosis, period of survival, and results in terms of function. Unfortunately, owing to lack of details in the original reports, each table deals with only a proportion of the cases, and few conclusions can safely be drawn from the figures. The condition of only half the survivors had been reported upon three months or more after operation. It is significant of the incompleteness of the information available to him that Haymond was not able even to consider the influence on the result of the anatomical part of the small intestine resected or of the length of intestine remaining—two factors which are likely to be of major importance.

It is clear that considerable variation exists in the response to removal of a large part of the small intestine. Brenizer (1929) stated: "We must conclude that the minimum extreme resection may fail in time and the maximum offers good results, and that there are always possibilities for good and bad between the two extremes." This is true so far as it goes, but the possibility for good is a very strong probability when the resection is not much above 6 to 8 ft. (1.8 to 2.4 m.), or when some 6 to 8 ft. (1.8 to 2.4 m.) is known to remain, and the chances diminish only as these limits are passed. There is certainly an important element of unpredictable and individual variation, but the final result depends to a very great extent on the length of bowel left to the patient.

The actual length of the bowel resected is of much less importance than the fraction it represents of the whole, just as the functional result of a limb amputation depends on how much remains and not on what has been removed. However, perhaps rather naturally, because of the positive nature of this measurement and the dramatic appeal of the very long resections, a disproportionate amount of attention has been given to such lengths as measured. The competitive spirit is exemplified by one author who, having removed 11 ft. (3.4 m.), claimed that this was not only the most extensive resection on record for mesenteric thrombosis, but also the second largest for any cause in the American literature and the tenth largest in the entire literature. Length resected, as an isolated observation, is of course of some importance, as in certain circumstances it may not be practicable to ascertain how much bowel has been left.

A surgeon finding himself obliged, at such an operation, to remove 15 ft. (4.6 m.) of small bowel can only hope his patient has at least an average length of it. This is usually taken as 22 ft. (6.7 m.), the range of variation being from 15 to 32 ft. (4.6 to 9.8 m.) (Brenizer, 1929). Exceptionally, a healthy small intestine may measure less than 15 ft. (4.6 m.) and it is well known that in some cases of chronic jejuno-ileitis of the "total" rather than the "regional" type extreme shortening occurs. In a case of this kind, not reported here, which recently came to necropsy, the whole small intestine measured only 6 ft. (1.8 m.) in length. The measurement of a contractile muscular organ such as the small intestine is obviously a difficult matter. Spasm reduces it considerably, which was very evident during the operation on Case 2, below. The length of jejunum not requiring removal was marked off and noted to measure between 4 and 5 ft. (1.2 and 1.5 m.); when ready for anastomosis it was so obviously shorter that it was remeasured and found to be only just over 3 ft. (0.9 m.). Clamping of the mesentery and the manipulations involved in resecting the distal intestine were presumably responsible for the shortening.

Case 1

A man aged 29 was seized with violent abdominal pain at 8 p.m. on July 6, 1939, and admitted to the Bristol Royal Infirmary the following afternoon. He was cold and appeared very ill, with a pulse rate of 144. He obtained some relief from his pain by sitting up, a position he insisted on maintaining while being examined. His abdomen was rigid and tender. There was a history suggesting a chronic duodenal ulcer of several years' duration, and a diagnosis of "probably perforation" was made. Some doubt was felt on account of the position of relief from pain which he adopted, also because of his restless movements. He was given

morphine and intravenous saline, and after four hours his condition, though still very poor, had improved enough to allow operation.

Operation.—This was performed on July 7, 23 hours after the onset. The peritoneal cavity contained blood-stained fluid. The stomach was large. There was no perforation, only a healed duodenal ulcer with scarring and stenosis. The lower abdomen was filled by black coils of small intestine, which had passed from right to left through a slit, apparently congenital, in the mesentery. The margin of the aperture was divided so that the coils of bowel could be withdrawn. There was no difficulty in judging them non-viable from their appearance and from the absence of pulsation in the mesenteric arteries. The affected bowel was resected, leaving behind a few inches of ileum and 4 to 5 ft. (1.2 to 1.5 m.) of jejunum. After cutting away its mesentery the resected bowel was found to be just over 14 ft. (4.3 m.) in length. The cut ends of the remaining bowel were closed and the jejunum was anastomosed side to side with the caecum. The patient's condition continued to cause anxiety for several days after the operation.

During convalescence he was greatly troubled by diarrhoea, up to 10 times daily, which was unaffected by drugs or changes of diet. On discharge from hospital, five weeks after operation, he weighed 85 lb. (38.5 kg.), compared with his normal 130 lb. (59 kg.). He continued weak and generally unwell for some weeks, but gradually improved and the diarrhoea lessened. Three months after operation his condition was fair and the bowels acted only three or four times a day. He was, however, getting increasing symptoms from his duodenal ulcer. A radiograph showed that this was active, and that the meal passed rapidly to the caecum. He improved with medical treatment, and five months after operation was in much better health. Ulcer symptoms then recurred more severely than ever.

He was admitted to another hospital, where partial gastrectomy was carried out six months after the first operation. This was in the early months of the war, when some confusion existed, and it does not appear to have been known at the second hospital that most of the small intestine had been removed. He made an excellent recovery and returned home well a month later. The diarrhoea had by this time entirely ceased, the bowels acting on an average once daily with an occasional day missed. It was not until after the war that an attempt was made to trace this patient. Unfortunately it has not been possible to examine him, but he is known to have been in good health and at work in December, 1949, more than 10 years after resection of the small intestine.

Case 2

A married woman aged 41 attended the Bristol Royal Infirmary with a carcinoma of the caecum, for which a right hemicolectomy was carried out on October 28, 1948. A chain of carcinomatous glands had to be dissected off the superior mesenteric vessels. She remained well for a year, but another mass then appeared in the right iliac fossa and she was readmitted to hospital.

Operation.—On December 9, 1949, the recurrent mass was excised with the iliacus fascia, right ureter, and external iliac artery. Metastatic spread was, as at the first operation, confined to the mesenteric glands, but this time they were so bound up with the superior mesenteric vascular trunk that dissection was out of the question. The superior mesenteric artery and vein were divided clear of the highest affected gland, and the mesentery, with the devascularized small intestine, was excised in a block with the main tumour mass. The resected bowel was later measured and found to be 11 ft. (3.4 m.) in length. Between 4 and 5 ft. (1.2 and 1.5 m.) of jejunum remained, and 1 in. (2.5 cm.) of ileum, the latter being just proximal to the end-to-side anastomosis of ileum to transverse colon carried out at the original hemicolectomy. Continuity of the alimentary canal was restored by end-to-end anastomosis of the jejunum to the stump of the ileum. Recovery was uneventful.

During convalescence there was little trouble with diarrhoea. At first there were three stools daily, but after three weeks they were reduced to two. No drugs were given, but a diet high in carbohydrate and protein and low in fat was found to be most satisfactory. The stools were never more than semi-formed, and, unless fat was kept to a minimum, were pale and obviously fatty. Her weight on leaving hospital a month after operation was steady at 98 lb. (44.5 kg.), compared with 120 lb. (54.4 kg.) before operation, and she felt remarkably well. The tendency to looseness of the bowels diminished and she gradually found herself able to take the ordinary meals of her home, avoiding more than a minimum of green vegetables. She slowly regained weight, and two months after the operation weighed 103 lb. (46.7 kg.), the bowels acting twice daily. She felt very well and was already doing all her housework. Seen at intervals, she continued well and appeared to be in excellent health in November, 1950. Shortly afterwards she began to feel discomfort in the right iliac fossa. When examined a little over a year after the operation a hard fixed mass was palpable, without doubt a further recurrence of growth.

Discussion of Cases

In Case 1 it was obvious how much intestine would have to be removed. It seemed a great deal, but there was no alternative. In Case 2 the decision was a much more difficult matter. Less radical, but still perhaps adequate, surgery for the malignant glands would have permitted the leaving of twice as much small intestine. It would have been possible to enucleate the uppermost of the affected glands, instead of taking them in a block with the rest, and so to divide the superior mesenteric vessels more distally. In both cases the opportunity was taken to estimate the length of bowel remaining. The first patient was so ill that the estimate was made only by the appearance of the bowel coils *in situ*. In Case 2 the bowel was carefully examined and the measurements were as accurate as those of living bowel are likely to be. The shortening of the residual bowel which occurred from muscular contraction has already been mentioned. The length remaining was of the same order in both cases, if anything less in Case 2. This patient had a rather shorter small intestine originally, so that the proportion removed was about the same in both.

Case 1 certainly had a great deal more trouble with diarrhoea in the post-operative period and was in real distress from this for some weeks. His case was complicated by the presence of a duodenal ulcer. The diarrhoea, which had already lessened, was completely relieved after the partial gastrectomy. Case 2 might have been expected to have more trouble with diarrhoea than she did, seeing that she had previously lost the right half of her colon. A striking contrast between the two patients was in their personalities. Case 1 was throughout a difficult patient, anxious and always complaining. Admittedly he had reason to be so in his severe illness, but Case 2 was the exact opposite, quietly determined to get well and with never a complaint from start to finish. It is possible that an unusually stable nervous system was a factor in the mildness of her intestinal symptoms and in the rapidity with which physiological adjustment took place.

Conclusions

Removal of more than three-quarters of the small intestine is likely to be followed by serious permanent effects, but there is considerable variation between individuals. Up to one-half of the intestine can be resected without fear of metabolic disturbance.

If the circumstances preclude an estimate of one half, then 6 ft. (1.8 m.) can be considered safe to remove. Except when the small bowel is shortened by disease it is rarely less than 15 ft. (4.6 m.) in length.

In the more extensive resections it should be possible to estimate the length of the remaining bowel. To leave 8 to 10 ft. (2.4 to 3 m.) is ample, and the taking of the slightest risk in order to leave more cannot be justified, while 5 ft. (1.5 m.) or less may be enough for subsequent good health.

Tetany should be watched for as a possible post-operative complication.

The general tendency is for health and weight to improve, and for diarrhoea to lessen, with the passage of time.

Extensive resections give better results than one might expect, and should not be allowed to fail through being insufficiently radical.

Summary

Extensive resections of the small intestine are discussed and an attempt is made to give some guidance on how much can be removed in certain circumstances. Emphasis is placed on the proportion of the whole removed, and the amount left behind, in determining the result, rather than on the actual length resected. Two new cases are reported in which the result was satisfactory ten years and one year after a resection of the order of 70%. In each of them some 4 to 5 ft. (1.2 to 1.5 m.) of small intestine remained.

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At the Royal Society of Tropical Medicine, on December 13, Dr. D. B. Jelliffe, senior lecturer in medicine, University College, Ibadan, Nigeria, speaking on the African child, described a form of infective gangrene of the mouth which differs from cancrum oris, since it infects the bones. This terrible and destructive disease, which may strip the tissues from half the side of the face, can be cured by penicillin if taken early, but, although in such cases a remarkable degree of replacement of lost tissue takes place, there is usually gross permanent disfigurement. The aetiology is not clear, but infection and malnutrition must both be important. The newborn baby may have to share his mother's (or grandmother's) milk with a brother 2 or 3 years old, and the milk may be thin, though often unexpectedly rich in protein. Congenital syphilis and relapsing fever are common, and congenital deformities, appearing with a frequency about that observed in Europe, lead not rarely to a fatal bronchopneumonia. The estimated infant mortality rate in Nigeria is somewhere between 300 and 500 per 1,000 live births.

ORCHITIS IN BORNHOLM DISEASE

BY

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In the light of the reported widespread outbreak of Bornholm disease in this country an account of its occurrence in a family and in a contact may be of interest, since epididymo-orchitis figures prominently as a complication.

That Bornholm disease may affect several members of a family is well known. Dabney (1888) describes a family of six children, five of whom had the disease; Payne and Armstrong (1923) cite a family of ten, all developing symptoms within a fortnight; and further examples are given by Pickles (1933), Sylvest (1934), and Howard (1938).

The incidence of orchitis differs markedly in the various epidemics. Sylvest (1934) gives a good account of epidemic myalgia. He states that orchitis was first described as a complication by Bacher in 1896. He reviews the literature and reports 93 personal cases, only one of which had orchitis. Jamieson and Prinsley (1947) describe orchitis as the commonest complication of an outbreak at Aden. It affected 12 out of 30 male cases and was usually unilateral. Orchitis appeared between the 8th and 36th days. The duration of pain and swelling was two to six days, but in one case it was ten days. Huss (1934) states that in the Swedish epidemic of 1931 the incidence of orchitis was 50 in 884 cases. He quotes three further outbreaks with orchitis, notably one at Hâby in 1931 in which an epidemic of "benign orchitis" was followed by typical myalgia. On the other hand, Scadding (1946), giving an account of an outbreak in the Middle East, makes no mention of orchitis in his cases. We can find no direct reference to this complication occurring in members of a family.

Case 1

A 52-year-old officer was taken ill on September 17, 1951, just after returning from a three-weeks holiday with his family in Devonshire. (Cases of Bornholm disease had occurred in the locality but had not been associated with orchitis.) He felt shivery and unwell and ached all over. His temperature was 103° F. (39.4° C.). Pain in the left side of the chest appeared on the 20th, and next day had spread across the front to the right. This was severe on moving or deep breathing. He was treated at home by his family doctor. On October 3 he returned to work, but aching pain started in the left testicle and lasted for 48 hours. On October 6 the pain had appeared in the right testicle, and by the 9th discomfort was acute and the organ had become swollen. On October 12 the pain across the chest returned, pleuritic in type and more severe on the right side. Next day he was admitted to hospital. His past history included the usual childhood ailments, mumps, paratyphoid, and malaria.

On examination there was no fever, but he was in some discomfort, complaining of pain in the right side of the chest and in the right shoulder. There was diminished movement of the right lower chest and at the right base air entry was

diminished. Pleural friction was heard over a small area below the right nipple. The blood pressure was 220/140. The right testis and epididymis were swollen and acutely tender. On routine examination the urine was normal. The leucocytes numbered 6,700 (polymorphonuclears 53%, lymphocytes 46%, eosinophils 1%). A chest film showed some tenting of the right leaf of the diaphragm, together with some haziness of outline. Serum agglutinations were negative for leptospira, typhoid, and brucella groups. Specimens of serum were sent to the Virus Reference Laboratory, Colindale, for tests against the Coxsackie virus. The chest pains had practically gone by October 17, although the right testicle and epididymis were still swollen but not tender. All abnormal signs had passed off by October 20, and the patient was discharged fit on the 22nd.

The family consisted of his wife and three sons. One, aged 22, on September 4 complained of indigestion and a rash, thought to be due to something he had eaten. He recovered in four days, but on September 14 he became ill again with fever, shivering, and pain in the shoulder and over the left lower ribs on deep breathing, sneezing, or coughing. Towards the end of his illness he had pain in both testicles, the left beginning first and becoming swollen. His illness lasted 14 days in all.

The second, aged 19, was taken ill on September 14 with headache, malaise, and pains over the lower ribs on both sides. Headache and photophobia were severe and his fever continued until the 27th. Towards the end of his illness pain developed in both testicles.

The third, aged 15, became ill on September 12 with nausea, malaise, and aching pains across the front of the chest. He had fever for a few days but made a rapid recovery. There was no testicular pain or any suggestion of orchitis.

The wife had a sore throat, beginning about the middle of September, but she remained well otherwise.

Case 2

A middle-aged officer had been closely associated with Case 1 since the latter returned from his holiday. On October 1 he became ill with fever, sore throat, and cough. There was no pain in the chest. Pyrexia and malaise lasted for one day only, but on October 4 he complained of pain and swelling of the right testicle. He was seen as an outpatient on the 8th, when the right testis was found to be normal but the epididymis was enlarged and tender. On the 10th there was a definite orchitis. Intermittent testicular pain and swelling persisted. Considerable enlargement and much tenderness of the testis and epididymis continued until October 24. From then onwards symptoms resolved.

Summary

The importance of orchitis as a complication of Bornholm disease is stressed.

This cause should be considered in cases of epididymo-orchitis of undetermined aetiology, particularly if the condition appears in epidemic form.

Orchitis should be looked for in cases of Bornholm disease, especially in the second week.

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"TRIGGER-THUMB" SIMULATING PARALYSIS

A REPORT OF TWO CASES

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Recently two patients have been seen who appeared at first to have an isolated paralysis of the flexor pollicis longus.

Case 1

A housewife aged 53 suddenly noticed that she was unable to flex the terminal joint of her left thumb. She had not had any previous symptoms in the thumb, and her only other complaint was of some acroparaesthesiae in both hands. When first seen, some months later, the only detectable abnormality was loss of active flexion at the terminal joint of the thumb, though passively it appeared full, with some springy resistance at the limit. Faradic stimulation of the flexor pollicis longus produced a flicker of movement at the terminal joint.

General medical examination and an *x*-ray film of the thumb showed no abnormality. A tentative diagnosis of "hysterical paralysis" was made, and treatment by faradic stimulation and by attempts to re-establish active movement was begun.

The patient tried hard to achieve movement for about three weeks, and then suddenly she found that, with great effort and with pain felt in the anterior metacarpo-phalangeal region of the thumb, she was able actively to flex the terminal joint through a full range, but that it then became fixed in flexion and could not be straightened except passively, when a palpable click was noticeable at the site of pain. It was now evident that the diagnosis was "trigger-thumb" involving the flexor pollicis longus, and that the obstruction to movement which was occurring at the level of the metacarpo-phalangeal joint had been partly overcome.

Incision of the tendon sheath was advised, but during the usual long delay before admission the patient continued to practise flexing her thumb, and this gradually became easier and less painful, and eventually spontaneous recovery occurred, so that no disability remained. When seen 18 months later she complained only of odd twinges of discomfort in her thumb, but no catching. There was full painless active movement of the interphalangeal joint. Slight enlargement was palpable in the line of the sheath and tendon of flexor pollicis longus at metacarpo-phalangeal-joint level, and a slight click was noticeable here on active flexion-extension of the terminal thumb-joint.

Case 2

A housewife aged 55 suddenly found that she was unable to flex the terminal joint of her left thumb. When seen at another hospital, where a diagnosis of hysterical paralysis was made, she was referred to a psychiatrist, who was unable to find any evidence of psychological disturbance. When seen at this hospital some weeks later she was still apparently unable to bend the tip of her thumb, and her only other complaint was of slight acroparaesthesiae in the left hand. On going into her history in more detail it was found that the onset of the condition occurred when she woke up one morning with the thumb flexed at the terminal joint and had had to pull it straight. Subsequently she had been unable to bend it at this joint, except on two occasions

when she had fallen with the thumb bent under her, again causing the terminal joint to become fixed in flexion and requiring manipulation to pull it straight.

On examination it was found that active flexion of the terminal joint of the thumb had not been completely lost, for with the proximal phalanx held firmly a flicker of active flexion was noticeable, and, furthermore, this could also be reproduced by faradic stimulation of the flexor pollicis longus. Passively, flexion was full, but with a springy resistance at the limit. Some tender enlargement in the line of the sheath and tendon was palpable at the metacarpo-phalangeal-joint level, and the anterior border of the base of the proximal phalanx seemed unduly prominent. There was a suggestion of creaking at this level on attempted flexion of the terminal thumb-joint. An *x*-ray film of her thumb showed no abnormality.

The patient continued repeatedly to try to make her thumb bend. After a few minutes there was a sudden sensation of tearing, and almost full active flexion of the terminal joint was restored. It was now accompanied by coarse creaking in the position of the tendon sheath at the metacarpo-phalangeal-joint level. The diagnosis was thus again established as "trigger-thumb," the obstruction being overcome by force. She was able to keep the movement of the terminal joint of the thumb for the rest of the day, but by next morning it was again quite stiff. When seen several weeks later the condition was unchanged, and, what is more, she was beginning to develop a similar condition in the opposite thumb. In this case, however, it was proceeding along more classical lines, for she was having difficulty in both bending and straightening the terminal joint, and this was associated with a "click," most noticeable on extension, and located at the usual metacarpo-phalangeal-joint level.

Tendon-sheath incision was suggested for her left thumb, but she was not keen on this, and so was advised to go on trying to re-establish normal movement of the tendon. She was seen three months later, when her left thumb was improving in that, although fixed in extension first thing in the morning, with active exercise it soon regained normal mobility, though this was associated with some clicking in the line of the tendon sheath. The right thumb at this time presented a similar picture.

She was finally reviewed after a further nine months, when she said that both her thumbs were quite normal, and, indeed, on examination the only slight abnormality was some palpable enlargement in the line of the sheath and tendon of the flexor pollicis longus, on both sides, at the metacarpo-phalangeal-joint level.

Discussion

In adults "trigger-finger" affecting the ring and middle fingers is more common than "trigger-thumb." The usual clinical picture is that of a sudden onset of difficulty in bending and straightening the terminal joint, but the difficulty is experienced in semi-flexion. It is associated with a click or jerk palpable in front of the metacarpo-phalangeal joint, for this is the level at which the obstruction commonly occurs (Croh, 1937; Wiles, 1949).

In more advanced cases the obstruction may have to be overcome by passive stretching, and extension usually causes more difficulty than flexion, so that the terminal joint tends to become fixed in the flexed position. In these cases the diagnosis presents no difficulty. "Trigger-thumb" is particularly common in infancy and childhood, and is frequently bilateral; it may be present from birth. Case reports, which are not numerous, appear to be confined to this group (Compere, 1933; Hudson, 1934; Jahss, 1936; Zadek, 1942; Rose, 1946; Sprecher, 1949). The signs are similar to those of the adult group, but the presenting symptom is commonly that the child's thumb has become fixed in flexion. No report could be found of the terminal joint becoming fixed in extension.

The obstruction may be caused either by enlargement of the tendon or by enlargement of the tendon with narrowing of its sheath in front of the metacarpo-phalangeal joint. The former factor alone appears to be by far the more common one. This feature distinguishes the pathology of "trigger-finger" and "trigger-thumb" from that of stenosing tenosynovitis occurring at the radial styloid (de Quervain's disease). In this, the narrowing of the canal within the sheath by the effects of inflammation of the sheath is the important cause of the symptoms and signs (Keon-Cohen, 1951). In "trigger-finger" or "trigger-thumb," however, inflammation of the sheath is not usually seen, and Sprecher found no such evidence in 12 cases.

The consensus is that conservative treatment is of very doubtful value and that surgery in the form of vaginotomy is the only really effective and rapid cure.

The two cases in middle-aged women reported here are unusual in that the real diagnosis was masked because the terminal joint of the thumb had become fixed in extension. At first, as all too often happens when no obvious organic lesion can be discovered, a diagnosis of hysteria was made. In the first case the diagnosis was elucidated by the patient's own effort; in the second, foreknowledge of the syndrome helped to solve the problem. It was fortunate, from the latter patient's point of view, that the psychiatrist was unable to detect any psychological abnormality. In establishing the diagnosis at an early stage, the springy feel at the limit of flexion, due to buckling of the tendon of the flexor pollicis longus distal to the obstruction, and the palpable enlargement of the tendon and sheath at the metacarpo-phalangeal level are useful signs. The complete spontaneous recovery of both cases is in keeping with the prognosis for the more common types of this lesion in adults (J. C. Scott, personal communication). However, as it takes many months to recover spontaneously, incision of the tendon sheath as a method of quick relief in those in whom the functional disability is troublesome should be considered. Physiotherapy, except for attempts by the patient to break down the obstruction by repeated active movements, is of no use.

Summary

Two unusual cases of stenosing teno-vaginitis of the flexor pollicis longus simulating paralysis are described.

Hysteria was initially diagnosed, and one case was actually sent to a psychiatrist.

Spontaneous and complete recovery occurred in both, but it took many months.

Physiotherapy, other than repeated active movements on the part of the patient, was not of value.

I am indebted to Mr. Peter Wright for reviewing the second case.

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Medical Memoranda

Gangrene of Unknown Aetiology in the Foot

Gangrene of the extremities is rare in infancy and childhood. In older children it seems to occur rather more commonly than in infants, and the cause is less obscure.

A number of cases reported have followed acute exanthemata and other general infections. Scarlet fever has been particularly indicted, and Hoyne and Smollar (1941) reviewed 15 such cases. Others have followed measles (Winstead, 1935) and chicken-pox (Watson, 1934), while Martin and Shore (1928) reviewed the literature and found cases following typhoid, typhus, measles, scarlet fever, diphtheria, pneumonia, appendicitis, tonsillitis, and pulmonary tuberculosis. Uhr (1838) found pneumococcal septicaemia in his case. In a series of 50 cases in infants and children reviewed by von Khautz (1914) 39 followed infections. Thrombocytopenia in association with infections has resulted in peripheral gangrene in children. This occurred with scarlet fever in the case of Webb *et al.* (1947) and with chicken-pox in that of Stoesser and Lockwood (1939).

Few cases have resulted from emboli. In a review of such cases, Craig and Muns (1931) reported the case of a child in whom gangrene was due to emboli from aortic stenosis. In von Khautz's (1914) series four were presumed to be due to Raynaud's disease. Lawrence and McCance (1931) described a child with diabetes causing peripheral gangrene. Other causes are frost-bite, trauma, ergot poisoning, local infections, and periarteritis nodosa. Bandages and plaster casts applied too tightly and weights tied to the foot to assist the delivery of infants have all caused local gangrene.

Peripheral gangrene in association with the presence of cold agglutinins in the serum has been reported in an adult by Stats and Bullowa (1943). Presumably the arterioles were plugged by agglutinated red blood cells. Gangrene may occur in association with paroxysmal haemoglobinuria, and this has long been known to occur in the absence of syphilis (Johnson, 1894).

Except in cases of emboli and arterial spasm, peripheral gangrene must be assumed to be due to thrombosis following arteritis consequent upon some other condition. Arteritis has been proved histologically by Martin and Shore (1928) and Hoyne and Smollar (1941).

The following case is reported because of the mildness of its course and the complete lack of aetiological factors.

Case Report

A boy aged 8 was well until March 12, 1950, when he appeared listless. After a restless night he was still listless, and also off his food but thirsty. In the afternoon he complained of some pain in his right big toe. This appeared bluish-red and swollen, and some reddish patches on the medial surface of the leg were noticed. On March 14 his condition was much the same, but at midday he had a major convulsion lasting about an hour. There was no history of trauma to the foot, and his shoes were free from protruding nails. Later in the day he was admitted to hospital.

Apart from pink disease when aged 2, and recurrent attacks of bronchitis in the past two years, he had had no illnesses.

On admission he was flushed and looked extremely ill. Temperature 103.5° F. (39.2° C.), pulse 128, respirations 26. Lips and tongue dry, tongue also furred. Ears, throat, neck, and chest normal. Heart: cardiac impulse forceful; apex beat in fifth space in mid-clavicular line. Heart sounds muffled; short soft systolic murmur audible at apex. B.P. 110/70 mm. Hg. Abdomen, arms, and left leg normal. Right leg: big toe black, swollen, and tender in distal two-thirds; felt same temperature as corresponding toe of other foot. Plantar surface of fourth toe similarly affected. Plantar surface of fifth toe and area about 1 in. (2.5 cm.) in diameter on lateral border of the foot blanched and cold. Four dark-red, slightly raised, hot areas measuring 0.5 to 1 cm. in diameter on dorso-lateral surface of foot (Fig. 1).

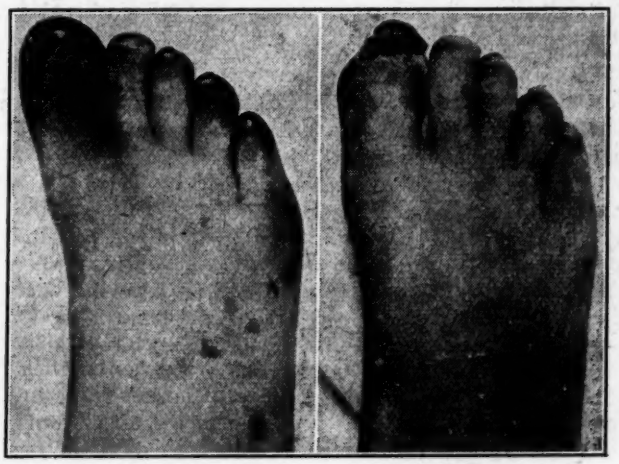

FIG. 1.—Condition of foot on March 18.

FIG. 2.—Condition of foot on May 4.

Several red streaks on medial side of lower part of leg. Four small pustules on lower part of leg and foot and one large pustule on left buttock. Lymph nodes in groins not enlarged. Pulsation normal in all palpable arteries, felt in entire length of dorsalis pedis artery of affected foot. No difference in circulation detected between the two legs on raising and lowering them.

Investigations.—Hb, 11 g.%; W.B.C., 9,000 per c.mm. (neutrophils 86%). Urinalysis: protein 90 mg. per 100 ml.; scanty cellular and granular casts, epithelial cells and erythrocytes in centrifuge deposit. Rothera's test, slight positive. Benedict's test, negative. Blood sugar (mid-morning), 144 mg. per 100 ml. Cold haemagglutinins, negative. Blood W.R., negative. Blood culture (10 days), sterile. Pus from pustule on dorsum of foot gave scanty staphylococci (coagulase-negative). *X*-ray film of foot (repeated after three weeks), normal. *X*-ray film of chest, normal. Tuberculin reaction (jelly test), negative.

In view of the heart murmur, the diagnosis made on admission was acute bacterial endocarditis. The patient was therefore treated with crystalline penicillin, 2,000,000 units daily for nine days, and sulphadimidine, 12 g. daily for six days. The general condition rapidly improved, and after five days the cardiac murmur had disappeared. The fever reached 99–100° F. (37.2–37.8° C.) after two days, but did not completely settle to normal for 10 days. The preliminary diagnosis was discarded after nine days in hospital, but penicillin therapy was continued for another 16 days (procaine penicillin–aluminium stearate, 300,000 units daily). After four days in hospital an enlarged tender lymph node was felt in the right inguinal group. The gangrenous areas did not spread, but gradually became blacker. The blanched and reddened areas also gradually blackened. All areas were kept dry, but the big toe slowly became fluctuant, and after 10 days began to ooze a mixture of pus and altered blood, which was sterile on culture.

On the 22nd day after admission the nail and surrounding tissue were removed to allow egress of this material. Repeated blood counts during this time showed a range of 8,500 to 11,500 leucocytes per c.mm., with 54–69% neutrophils. Subsequent urinalyses were all normal. The other gangrenous areas gradually separated after the 30th day in hospital, and by the 42nd day they had all separated, leaving clean granulating surfaces (Fig. 2). In none of these areas was separation deeper than the subcutis. They were dressed with petroleum jelly gauze, and all healed over the course of the ensuing 10 weeks. The gland in the right inguinal region did not break down, and gradually subsided. The patient was discharged from hospital on the 58th day after admission, surveillance being continued in the outpatient department. A small protrusion of the distal phalanx of the big toe sequestered 10 weeks later. No regrowth of the nail has occurred.

Comment

In the case here reported no association or predisposing factors could be determined. The history did not suggest a previous generalized infection. There was some support for a diagnosis of local infection in the presumed fever before admission to hospital and the convulsion, which must be assumed to have been febrile in origin. The lymphangitis in the leg and the later development of an enlarged tender lymph node in the groin also lent support to this diagnosis, but these may have been secondary to the pustules on the foot and leg. The distribution of the gangrene did not, however, suggest a local infection. The normal leucocyte count was also against an infection, and osteomyelitis of the tarsus was excluded by radiography.

Arteriosclerosis and thromboangiitis obliterans could be excluded in view of the age, and there had been no previous episodes to suggest a diagnosis of Raynaud's disease. The course of the illness did not suggest a diagnosis of periarteritis nodosa. Diabetes and syphilis could be almost certainly excluded. There was no haemoglobinuria and the serum was negative for cold haemagglutinins. No history whatever of trauma could be obtained, and frost-bite was out of the question.

Thus none of the accepted associated or predisposing factors in the causation of peripheral gangrene could be demonstrated in this case. The evidence leans more towards a local infection than any other aetiological factor.

Thanks are due to Professor R. S. Illingworth, who gave permission for the publication of the case report and for his encouragement and advice in the preparation of this paper.

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An Anomaly of the Sedimentation Rate in Rheumatic Diseases

In view of the extent to which the Wintrobe sedimentation rate is now being used in the rheumatic diseases, in particular for the assessment of steroid hormone treatment, it was thought that it would be useful to record in a preliminary note an anomaly we have observed, since it may be very misleading in such trials. A full account, it is hoped, will be published in the near future. It would appear from the paper published recently by Gilmour and Sykes (1951) that the phenomenon may not be confined to the rheumatic diseases.

In this unit during the past 10 months, largely owing to our participation in the Medical Research Council United States–United Kingdom scheme for the treatment of rheumatic fever with cortisone, etc., we have determined simultaneously the sedimentation rate by the Wintrobe and the Westergren methods. In some cases an anomaly in the sedimentation rate has been noted in that the Westergren method has given a very high recording, whereas, with blood taken from the same syringe, the Wintrobe method has given readings falling within the normal range or only slightly above it. The Westergren rate was a better index of the clinical state. The Westergren readings were virtually unaltered when dry sodium citrate was used instead of citrate solution as the anticoagulant. The following simultaneous weekly readings taken from a patient with disseminated lupus erythematosus illustrate the type of discrepancy that has been encountered.

Westergren readings (mm./hr.): 75, 84, 65, 43, 35, 36, 57, 98, 60, 90, 90.
Wintrobe readings (mm./hr.): 6, 5, 6, 5, 5, 14, 5, 16, 12.

The haematocrit readings on these occasions ranged from 40 to 43.

As most cases here are in-patients for prolonged periods, we have been able to observe the incidence of this anomaly and have attempted to correlate it with the clinical state. Cases showing this anomaly are those of Still's disease, rheumatoid arthritis, and disseminated lupus, and, very occasionally, acute rheumatic fever at the onset of the attack. In some cases the anomaly occurs consistently over several weeks. In other cases the phenomenon occurs sporadically. When it is noted, sedimentation rates are repeated in duplicate.

The clinical state of patients showing this discrepancy would lead one to expect a high sedimentation rate. In the example quoted the patient was febrile, had arthritis and a lupus rash, was losing weight, and had leucopenia.

In the cases showing these discordant readings, similar low values are obtained when heparin is used as an anticoagulant and the blood set up in either a Wintrobe or a Westergren tube. The addition of dry citrate to the previously oxalated or heparinized blood causes the sedimentation rate to rise to a level approximating that obtained with the Westergren method. Further investigation of the mechanism is proceeding. It appears probable that it depends on the anticoagulant's effect upon the *p*H.

The cases in this unit belong to a selected group (rheumatic diseases) in whom it is apparent that this phenomenon is not uncommon (10 out of 86 cases). It is not known yet to what extent this phenomenon occurs in other diseases. In the rheumatic diseases, at least, the assessment of activity by the Wintrobe method may be misleading.

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Reviews

GENETICS AND THE EYE

Genetics in Ophthalmology. By Arnold Sorsby. (Pp. 265; 236 figures. £2 2s.) London: Butterworth and Co. 1951.

With the single exception of serology, ophthalmology affords better opportunities for useful genetic study than perhaps any other branch of medicine. The relative ease with which observations can be made on those still living, the profusion of hereditary anomalies of all kinds, the strikingly high proportion of conditions in which transmission is uncomplicated, all contribute to this pre-eminence. It is indeed true that almost the whole of medical genetics can be expounded by means of ophthalmological examples; but there is more to it than this; for in a country like our own at the present time, thanks to the conquest of infection, the proportion of blindness and ocular disease due to genetic causes is very high indeed. This is emphasized in Professor Sorsby's book; he supports the view, for example, that such conditions as glaucoma and senile cataract have a hereditary basis. If, then, any branch of medicine justifies a genetic textbook of its own, this is the subject of choice.

The first part of the book is on general principles. Some might think that it would be better to refer the reader to a general textbook, but surely Professor Sorsby is right in undertaking the task himself. Inevitably, perhaps, this is the least successful section, for space does not permit the argument to be developed at sufficient length. Moreover, Professor Sorsby has rather fallen between two stools. He has been influenced by my own introductory textbook (to which he makes generous reference), in which, for the sake of simplicity, the approach was made strictly deductive; but at the same time has preserved in the main the more usual approach adopted by other writers. Thus he does not get the best out of either method. Nevertheless the theoretical introduction is competently handled even if it is adequate rather than inspired. One important subject, however, is not made sufficiently clear. The reader will not understand from the account of crossing-over on p. 29 that linked genes (it is a pity that the word linkage was ever coined) tend to separate unduly often just as frequently as they tend to be associated unduly often, and so the old error that traits are linked when they tend to occur in association may be perpetuated.

The largest section of the book is on isolated ocular anomalies. Here the author adopts a plan which could be fully successful only in the hands of someone of great experience and knowledge in the pathological, clinical, and genetic fields. He gives his own summing-up for each condition, illustrating it with selected family histories. It will be found a readable and reliable guide. Those with special knowledge of some particular disease may be inclined to question points of detail here and there, but it is a fine summing-up and probably as good as one man could achieve. The research worker will find a straightforward statement and a bibliographic key to the literature.

It is perhaps in the last and shortest section, on generalized disorders with ocular aspects, that Professor Sorsby's mastery of his subject appears most clearly, for he threads his way skilfully through the difficulties of classification. In this section there is a mistake which ought to be pointed out, as it will puzzle many readers: the pedigree of Fig. 214 suggests ordinary recessive inheritance, not sex-linkage as stated in the legend.

There are 236 figures, beautifully reproduced on good paper; many are in colour. It is an attractive volume and one which should be of great value to ophthalmologists as well as to workers in human genetics.

J. A. FRASER ROBERTS.

MOSQUITO BEHAVIOUR

Mosquito Behaviour in Relation to Malaria Transmission and Control in the Tropics. By R. C. Muirhead-Thomson, D.Sc. (Pp. 219; illustrated. £1 10s.) London: Edward Arnold. 1951.

Dr. Muirhead-Thomson gives an account of the results of recent research on the behaviour of anopheles mosquitoes under conditions in nature as studied by modern methods. He discusses in an interesting manner how different species behave when entering and leaving houses, how they select their daytime resting places, what circumstances determine where they shall lay their eggs, and many other features of their behaviour and relations to their environment, together with how all this fits in, or fails to fit in, with methods used for their destruction. Especially interesting to the field worker are his accounts of the many ingenious devices used in modern field research methods in this connexion.

As the author points out, the recent extensive use of residual spraying with D.D.T. and other insecticides has given to every detail of behaviour an importance it did not previously have, so that investigation of behaviour has now become a prime necessity for control. Summarized and presented as a connected story, anopheles behaviour and the methods used in its investigation make an interesting contribution to natural history and a valuable and readily accessible source of information both to entomologists concerned with insect behaviour and to ecologists. To workers interested or concerned in malaria control the importance of this careful study based on wide experience by the author will have a special appeal. The chapter on the relation of behaviour to control by insecticides, including D.D.T. and gammexane in particular, will serve both as a caution and a guide to action. The book is one to be read for interest and pleasure, but reread and studied by every malariologist, for no comparable account has so far been available discussing anopheline behaviour so comprehensively and in such detail.

S. R. CHRISTOPHERS.

ELECTRICAL INJURIES

Fortschritte in der Behandlung Schwerer und Schwerster Hochspannungsunfälle. By Professor H. Fischer and Dr. R. Fröhlicher. (Pp. 72; 23 illustrations. M. 10.80.) Stuttgart: Georg Thieme. 1951.

Following Bywaters's demonstration of myoglobinuria in the crush syndrome, the authors have sought, and found, evidence of myoglobin in the urine of victims of severe electrical high-tension accidents. The pigment is said to be released from muscles by electrothermic action and to act as a nephrotoxin. For treatment they advocate immediate alkali therapy (sodium bicarbonate by mouth or even intravenously) to minimize any renal damage, and early active measures, which included the amputation of two limbs and peritoneal dialysis in the

one case described in meticulous detail. Second-hand reports of eleven other cases are discussed; venesection of as much as one pint of blood is advocated as an adjuvant to the fluid therapy of haemoconcentration. The authors boggle at exchange transfusion.

Now there have been great advances in the general treatment of severe burns—argued so clearly, and applied so successfully, by Colebrook and others—but there has been, presumably, no change in the incidence of renal complications in electrical injuries in particular: they are very rare. While transient albuminuria is common, we found haematuria in only 10 out of some 5,000 cases of electrical injury, and it would disappear spontaneously a few days after the accident. One case alone had 70 ml. of blood in the bladder after a 45,000-V accident and died in complete anuria 48 hours later; both operation and necropsy were refused. In another case renal failure developed in the first 12 hours after a 25,000-V injury, and in a third case, surprisingly, as much as six weeks after a 2,000-V accident. Both recovered promptly after the amputation of an arm and a hand, respectively

But these were exceptional cases, and conservatism should be the rule in the local treatment of electrical lesions, especially where there is immediate or delayed necrosis, or necrobiosis, of tissues, rather than the frank burn of an arc discharge. For the extent of the former can rarely be appreciated at the beginning, and even extensive injuries may leave the general condition unimpaired. Moreover, progress, albeit slow, is often unexpectedly good. Thus, we have seen spontaneous regression of a cataract resulting from a stroke of lightning, and return to normal function of open elbow joints with gross soft-tissue and cartilage destruction from high-tension currents. But secondary haemorrhage is a very real danger.

Spastic or thrombotic vascular effects will often lead to quite dramatic symptoms (e.g., in the central nervous system) and add to the fascinating variability of electropathology. We have much to learn, but the search for a common denominator, even a nephrotoxic one, is to be condemned when it leads to the abandonment of the well-proved conservative treatment of electrical injuries.

STEFAN JELLINEK.

SMALLPOX

The Diagnosis of Smallpox. Issued by the Department of Preventive Medicine and Public Health, Leeds University. (Pp. 12; illustrated. 2s.) Leeds: H. Grayshon Lumby. 1951.

The clinician—even the expert one—has had good grounds in recent years for re-examining the fundamentals of the diagnosis of smallpox. It is undoubtedly true that in such circumstances a return to the classic work of Ricketts makes the expert aware that it left very little unsaid on the side of clinical observation. But all cannot find refreshment from such a source, and this may be sufficient excuse for the publication of a small booklet which contains the essentials for the clinician. Dr. C. W. Dixon saw a considerable amount of smallpox in North Africa, and the present publication contains the fruits of that experience. There can be no doubt that many of the mistakes in diagnosis arise from the fact that the student has been taught the "classical" sequence of events in smallpox. The impression is thus left that the variola virus, when it attacks the European, produces an almost uniform disease with a characteristic course.

The modern approach to all infectious disease, however, emphasizes the peculiarly personal reaction of the host to parasitic attack; the clinical picture produced is a compound of the "virulence" of the infecting organism and the defences—specific and non-specific—of the patient. Dixon expresses this point by defining nine "types" of smallpox. While this can be a useful device for general teaching purposes, it should not be forgotten that these are in fact merely nine broad stages in the modification of the disease from the most severe—purpura variolosa—to the most mild—variola sine eruptione—and that its greatest usefulness is probably not in any aid to clinical differentiation but as a convenient method of subdividing cases in an epidemic for statistical purposes.

The importance of distribution is rightly emphasized. In most clinical accounts of the disease too much attention has probably been given to a detailed description of the individual lesion in regard to its shape, size, location in the skin, and presence of umbilication. In fact, in examples greatly modified by previous vaccination the individual lesion can be indistinguishable from that of chicken-pox, and in such cases the general and focal distributions are the most important clinical facts.

This booklet is therefore a useful vade-mecum for the practitioner. It contains all the relevant information. It could perhaps have been improved—and not altered in character—if the various points had been grouped together under side-headings. This would have permitted more easy reference without interfering with the author's intention of keeping the booklet small and essentially clinical in its application. Readers in Scotland should note that specimens for examination should be sent either to Dr. Swain, Department of Bacteriology, University New Buildings, Edinburgh, 8; or to the Department of Infectious Diseases, The Brownlee Research Laboratory, Ruchill Hospital, Glasgow, N.W.

T. ANDERSON.

ALLERGY

Études Cliniques, Expérimentales et Thérapeutiques sur l'Allergie. Published under the direction of Professor Pasteur Vallery-Radot. (Pp. 242. 900 francs.) Paris: L'Expansion Scientifique Française. 1951.

This small paper-bound book consists of 29 articles, most of them short, which were presented recently before the French Allergy Society or at the first European Congress of Allergy held in Paris in 1950. The fact that the book is edited by Professor Vallery-Radot and Professor Tzanck indicates that the selection will be good. The subjects vary from the daily distribution of the mould flora of Paris and allergic cases of various types to experiments on allergy in animals. As was probably to be expected, the most interesting experimental reports are those of Halpern and his co-workers on the antihistamine drugs. They show that in the rabbit these drugs inhibit the Schwartzmann reaction and they tend to suppress local inflammatory reactions, thus allowing more rapid spread of infection in animals injected with *Salmonella typhi-murium*. A number of papers are on dermatitis due to various antibiotics and other drugs, and Professor Tzanck points out how much more often sensitization occurs when penicillin is used locally as a cream than as a solution. This book gives a fair indication of French thought on allergy.

C. J. C. BRITTON.

KEEPING UP TO DATE

Annual Review of Medicine. Volume 2. Editor, Windsor C. Cutting; Associate Editor, Henry W. Newman. (Pp. 486. $6.) Stanford, California: Annual Reviews Inc. 1951.

Medicine of the Year. 1951 edition. Edited by John B. Youmans, M.D. (Pp. 298. £2.) Philadelphia and London: J. B. Lippincott Company. 1951.

Cornell Conferences on Therapy. Volume 4. Edited by Harry Gold, M.D., D. P. Barr, M.D., McKeen Cattell, M.D., Frank Glenn, M.D., Walter Modell, M.D., and George Reader, M.D. (Pp. 342. $3.50, or £1 6s.) New York and London: The Macmillan Company. 1951.

In an age when most full-time workers in medical schools think themselves accursed if they have not succeeded in publishing some two or three papers a year, no matter how dull or mediocre, it becomes increasingly difficult for the average doctor to have even a nodding acquaintance with the vast literature which accumulates annually, still less to be able to say which paper is or is not worth while. It is scarcely surprising, therefore, that yearbooks of medicine and annual reviews of recent advances should become increasingly popular and increasingly useful. In such works a group of experts predigest the literature pertaining to their own subject, critically separate the good from the bad, and serve up the result in a concentrated, intelligible, and acceptable form.

Three books from America do this sort of thing very well but very differently. The *Annual Review of Medicine* contains a series of essays by experts in which recent advances in medicine only are broadly and critically surveyed. An extensive bibliography covering the references appears at the end of each chapter. Almost without exception the reviews are admirably done. They are clearly designed for those engaged in teaching or research whose knowledge of the subject under discussion is already well established. In *Medicine of the Year* the year's advances in all fields of medicine, including surgery and other specialties, are briefly reported in a more tabloid form. This is a general work of reference more useful for the general practitioner than for the specialist, though valuable for the latter too for information on subjects outside his own sphere.

The *Cornell Conferences on Therapy* were inaugurated in 1937 as a joint venture of the departments of medicine and pharmacology. To qualify for a conference a subject must be a problem in therapeutics on which widely divergent views may be held. They are introduced by a prepared talk from an appropriate member of the staff, and thereafter the discussion, no doubt carefully edited, is reproduced as an unrehearsed and extempore debate understandable to the general practitioner. The purpose is to stimulate interest in rational therapy and the method a report of a spontaneous, informal, and free discussion. It is all great fun and very easy to read as one's partisan interest is excited by this or that speaker in the debate. The course in pharmacology in most schools is isolated by some terms from that on clinical therapeutics, and to a considerable extent clinicians are apt to build the structure of therapeutic teaching with indifferent regard to its pharmacological basis. These conferences help to correct this tendency and to weave pharmacology and therapeutics into a single design. The conference is not a substitute for, but ancillary to, traditional forms of medical teaching and one which should be explored more fully in Britain.

D. M. DUNLOP.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received

A Manual of Lip-Reading. By M. V. Johnstone. (Pp. 108. 5s. 6d.) London: Blackie. 1951.

The Rational Treatment of Catarrh. By W. A. Troup, *M.C.*, M.D., Ch.B. (Pp. 85. 10s. 6d.) London: Chaterson. 1951.

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THUS WE ARE MEN

The foundation of a lectureship at the Royal College of Physicians by Lady Langdon-Brown in memory of her husband, Sir Walter Langdon-Brown, ensures the recurring recollection of a remarkable man who was also a loyal and devoted Fellow of the College. The President and Censors, with fortunate prescience, appointed Dr. Geoffrey Evans, Langdon-Brown's pupil, colleague, and collaborator, to deliver the inaugural lecture. By a tragic circumstance Dr. Geoffrey Evans did not survive to deliver the lecture which he had prepared and which appears elsewhere in this issue, and it was read with sympathy and understanding on October 30, 1951, by the President of the College, Dr. Walter Russell Brain. This was, therefore, doubly a memorial occasion, and Geoffrey Evans, in paying this fine tribute to his friend, had written for himself a splendid epitaph.

The lecturer described the puritan home of Walter Langdon-Brown in Bedford, with its abiding influence on his personality, and then told of his delighted emergence into the undergraduate life of Cambridge. His work in the Cambridge school of physiology and his association with Michael Foster and Gaskell gave his mind a stimulus which remained to the end of his life. The quoted description of his excitement as he watched the development of the pituitary gland in serial sections of the hen's embryo authentically communicates the thrill of scientific observation.

A different discipline awaited him at St. Bartholomew's Hospital, and Geoffrey Evans sketched the hospital background at the end of the century with Samuel Gee, whose house-physician Langdon-Brown became, as the peerless bedside observer; Norman Moore as the scholar physician; and Archibald Garrod as the first of the clinical scientists. Here Langdon-Brown himself learnt to observe the processes of disease, both in sick persons and in the post-mortem room—a long and fruitful apprenticeship, for he was 43 years of age before election to the staff of St. Bartholomew's Hospital. By that time he had already made a highly individual and important contribution to the medicine of his day. Almost alone among physicians in his knowledge of physiology, and stimulated by a profound desire to get sick people well, he wrote his famous textbook *Physiological Principles in Treatment*. It was an inspiring book for his generation, and, although the available therapeutic resources look meagre enough as one reads the first edition to-day, yet it was the first published application of physiology to clinical medicine and therapeutics. Here Langdon-Brown was a pioneer who has had many distinguished successors, but as the man who designed and built the first bridge he deserves honoured remembrance.

His second great service to the medicine of his generation was another essay in bridge-building, and he was again impelled to it by the necessities of treatment—the continuing impulse to heal the sick. After the first world war he began to correlate the hypotheses of the new psychology, represented in the work of Freud, Jung, and Adler, with clinical medicine. The researches of Gaskell, Langley, and Anderson into the autonomic nervous system and the increasing knowledge of the function of the ductless glands were the basis of his Croonian Lectures in 1919, and in them he stated for the first time his conception that these were the pathways by which emotional disorders were translated into disturbances of somatic function. This hypothesis he was to elaborate and restate in numerous addresses in succeeding years. Geoffrey Evans quoted a passage from his inaugural address as Regius Professor of Physic in the University of Cambridge in 1932. "Designed for an intensive preparation for action or defence," he said, "the sympathetic response may be dissociated, perverted, or prolonged, with serious effects to the individual," and the lecturer adds the comment that this introduces the ideas of organ habit and functional disorder as the cause of change of structure. Here again, as a host of successors slowly establish the steps in the complicated pathways between emotional states and physical disease, we are reminded of the recognition due to pioneers.

Langdon-Brown's legacy to this generation is his insistence on the unity of human personality—body, mind, and spirit—all aspects of one reality. An impairment of function of any of these components will adversely affect the harmony of the whole organism, and nothing which relates to human personality can therefore be foreign to medicine. The development of these ideas will be found in his book *Thus We Are Men*, of which Geoffrey Evans said, "It is a wonderful book to read." "Thus we are men and we know not how: there is something in us that can be without us, and will be after us; though it is strange that it hath no history what it was before us."

INSURANCE AND PENSIONS

A pamphlet[1] published last week by two Conservative Members of Parliament speaks of a crisis in the social services—"a crisis all the more dangerous for being unrecognized." Is this an exaggeration? Certainly no hint of a crisis appears in the second report[2] of the Ministry of National Insurance, published a few weeks before Christmas. It and its predecessor show that the colossal task of organizing an insurance scheme with about half the population paying contributions, and with most of the others covered either as dependants under the scheme or by family allowances, has been successfully achieved. None of the forebodings that the scheme would be too unwieldy to administer and that it would be impracticable to enforce it have materialized. The standard of compliance, even among the self-employed and non-employed classes, has been remarkably good.

What, then, is the crisis that Mr. Macleod and Mr. Powell speak of? The report of the Ministry of National Insurance goes no farther than the end of 1950. In the spring of last year the Labour Government raised the rate of retirement pension for the older pensioners. This in itself was important, for it represented a deliberate rift in the principles of the Beveridge report, which argued that a person needed the same guaranteed minimum income when his earnings were stopped by, say, unemployment as when they were stopped by sickness or retirement. But the increase in retirement pensions also explains the "crisis" in the social services. They were increased because of the growing inadequacy of the old rate to cover the cost of subsistence. It was laid down in the Beveridge report that the insurance benefit, paid as of right, should be adequate to cover the cost of subsistence in all normal cases. For the abnormal case national assistance was to be there to supplement or replace the benefit, but its scope in the insurance scheme as a whole was to be strictly limited. The "crisis" has arisen because the number of people applying for assistance to supplement their benefits is growing steadily.

As it turned out, the basic benefit of 26s. a week (42s. for a married couple) was never really adequate for full subsistence including rent. It was 2s. higher than the Assistance Board's scale of relief; but the Board's rate was exclusive of rent, for which an additional allowance was made. Thus even as early as the end of 1949, 18 months after the insurance scheme had come into force, of those being paid retirement pensions, sickness benefit, widows' benefits, and unemployment benefit, 18%, 11%, 25%, and 11% respectively were receiving supplementary assistance.

Later the scope of national assistance was widened further. In 1950 the rising cost of living forced the Assistance Board to revise its rates. As a result the assistance allowance, exclusive of rent, was raised to 26s. for a single person and 43s. 6d. for a married couple. This meant that more people became eligible for assistance payments, and the same rising cost of living that compelled the Board to put up its rates also compelled more people to seek its help. By the end of 1950, therefore, the proportion of households whose benefits were being supplemented by assistance had risen to 21%, 13%, 28%, and 18% respectively in the four categories mentioned above. Last year, when the retirement pension was raised for the older pensioners by 4s. a week for a single person and 8s. for a married couple, a similar increase was made in the Assistance Board's scales. These are now, therefore, like pensions, 50s. for a married couple; but again it should be emphasized that this figure is exclusive of rent. Taking an average figure for rent of 14s., Mr. Macleod and Mr. Powell thus calculate that the minimum income needed for subsistence by a married couple is 64s. a week, and they point out that the higher rate of retirement pension is consequently 14s. below subsistence and that the other insurance benefits are 22s. below.

The Government met the cost of increased retirement pensions, widowed mothers' allowances, and children's allowances payable to persons drawing benefits or pensions, not by increasing contributions, but by assuming a more realistic rate of unemployment. Because the rate was originally assumed to be 8% and in actual fact has been below 2% the insurance fund has been running a large surplus. Last year, therefore, the unemployment rate was assumed to be 1½% up to 1954, 2½% in 1954–5, and 4% thereafter. But, as the Government actuary pointed out, the assumption of a lower rate of unemployment only temporarily relieves the Exchequer of its liability under the National Insurance scheme. In the financial year 1952–3 the Exchequer will pay £37m. into the fund to enable income to cover expenditure. But by 1957–8 the sum will have risen to £150m., and by 1977–8 the Exchequer contribution will have grown to nearly £450m.—some £40m. more than was contemplated when the National Insurance Act was passed in 1946.

This heavy liability in the years to come is due to the ageing of the population and the consequent increase in the expenditure on retirement pensions. Thus, the postponement of retirement, which is regarded as usually being in the best interests of

[1] *The Social Services.* Published by the Conservative Political Centre.
[2] Cmd. 8412, 1951, H.M.S.O., London.

elderly people themselves, becomes of national importance. Unfortunately it is still too early to say whether the increased rate of pension since 1946 has outweighed the incentive of a higher pension still if a person postpones retirement. The report of the Ministry of National Insurance provides some provisional information on the subject, but it is admitted to be inconclusive. Roughly the same proportion of elderly people continue at work after reaching pensionable age as before July, 1948. For men this proportion is about 60%, for women about 50%. The proportion, however, falls off in the succeeding months, and 18 months after reaching pensionable age only about 45% of men and 33% of women are still at work.

Last year's National Insurance Act provided an additional incentive for people to postpone retirement by increasing the sum added to their basic weekly pension for each year they continue at work from 2s. to 3s. It will be some time before the effects of this on retirement are made clear. All that can be said at present is that we are a long way from achieving what, in view of demographic trends, must eventually be the objective—a normal retiring age five years older than the present minimum. In one respect a mere maintenance of the *status quo* in retirement trends is disappointing, for the same inflationary conditions which have reduced the value of the basic pension and other insurance benefits ought to encourage people to postpone retirement and at the same time make it easier for them to do so. If elderly people do not or cannot continue working when unemployment is at the rate of 1½%, what prospect is there of their doing so when inflation subsides and unemployment rises to, perhaps, 3%, which would be less than the long-term rate assumed by the Government actuary?

In two years' time the National Insurance scheme will be reviewed and a report made to the Treasury on the adequacy of the contributions payable to support the benefits. The Government should take the opportunity of assessing the adequacy of the benefits to cover the cost of subsistence. If, as is probable, they are found to be grossly inadequate, two courses are possible. Benefits and contributions could be raised all round, as Mr. Macleod and Mr. Powell suggest. The necessary increase in contribution would, however, fall severely on the lowest-paid workers. The Government might well, therefore, consider abandoning the present system of flat-rate contributions and benefits and substituting the system in force in many other countries of contributions and benefits related to earnings. This system was rejected by Lord Beveridge mainly because the benefits of the lowest-paid workers would be bound to be less than the cost of subsistence. But since the present system has failed to guarantee benefits adequate for subsistence the time has come to consider the whole matter afresh. What would be unjustified would be to let most benefits stay well below subsistence and give more favours to old-age pensioners. Lord Beveridge's warning is worth recalling: "It is dangerous to be in any way lavish to old age, until adequate provision has been assured for all other vital needs, such as the prevention of disease and the adequate nutrition of the young."

OSTEOARTHRITIS

Any systematic study of the nature of a disease process requires first of all a clear definition of its characteristic clinical and pathological features. Perhaps one of the most serious weaknesses in our understanding of the arthritides has been a lack of such a definition of the various types of arthritis. In recent times we have moved from the eighteenth century concept of "gouty rheumatism" through that of Charcot,[1] who classified most arthritis under the same heading of "arthritis deformans," to that of A. E. Garrod,[2] who was able to separate two groups, rheumatoid arthritis and osteoarthritis. The rheumatoid group may well conceal a variety of conditions whose most important common factor is that their aetiology is unknown; it is not necessary to assume that it is always the same. It is to be hoped that the present intensive study of this disease will bear fruit, although it must be admitted that so far the use of cortisone and A.C.T.H. as research tools has told us little in this respect.

Osteoarthritis, or degenerative joint disease, presents a problem of equal magnitude, and, as Ryle[3] wrote, "There is no disease of which a fuller, or additional, description does not remain to be written." Since osteoarthritis accounts for some 30–40% of all patients attending rheumatism or similar departments, it might seem a fruitful field for simple clinical study, and every practising doctor must meet almost daily the problem posed by a patient suffering from this condition, with its very wide variety of symptoms. These arise not only directly from the affected joints but also quite often from the very natural anxiety

1 *Clinical Lectures on Senile and Chronic Diseases*, 1881, New Sydenham Society, London.
2 *System of Medicine*, vol. 3, 1907 (Allbutt and Rolleston). Macmillan & Co., London.
3 *The Natural History of Disease*, 1948, Oxford University Press.
4 *Lancet*, 1927, **2**, 53.
5 *Proc. R. Soc. Med.*, 1943, **36**, 329.
6 Ibid., 1948, **41**, 509.
7 *Ann. rheum. Dis.*, 1950, **9**, 48.
8 *J. Lab. clin. Med.*, 1949, **34**, 1193.
9 *Amer. J. med. Sci.*, 1947, **213**, 181.
10 *J. Amer. med. Ass.*, 1951, **147**, 1629.

induced by the fear of arthritis. Orthopaedic surgery and physical medicine have made great contributions towards solving the problems of treatment, but the mere elaboration of specialized techniques such as cup arthroplasty cannot contribute greatly to our knowledge of the fundamentals of the disease itself.

For these reasons a clearer definition of osteoarthritis was essential, and Drs. J. H. Kellgren and R. Moore on page 181 of this issue provide a very definite advance towards this goal. What they term "primary generalized osteoarthritis" is distinguished from degenerative joint disease caused by trauma resulting from occupational, postural, infective, neurological, or similar factors. They suggest that there is a definite pattern of joint involvement which includes the terminal interphalangeal joints (Heberden's nodes) and the first carpo-metacarpal joints, and often most of the other diarthrodial joints of the body. The symptoms may be acute in onset, with swelling and redness of the affected joints followed by a more chronic and less painful phase, with bony overgrowth. Such cases in their early acute periods are often misdiagnosed as gouty—not only, be it said, by the lay public. Kellgren and Moore's concept of this phase as it affects the interfacetal joints of the spine is particularly interesting. They distinguish carefully between the involvement of these joints and the osteophytosis of the vertebral bodies often found in degeneration of the intervertebral disk. Both conditions may thus give rise to a very similar clinical picture, but radiography should enable a distinction to be made. They thus revive the ideas introduced by Putti[4] and utilized by Bankart,[5] who advised excision of these joints for lumbar or sciatic pain. A study of similar changes occurring in the cervical spine would also be of great interest, since, as Brain, Knight, and Bull[6] have pointed out, the changes around the intervertebral foraminae in this region may give rise to syndromes of pressure on nerve roots, accounting for some cases of so-called fibrositis and neuritis. It seems probable that many of these patients would be found, on careful examination, to be suffering from primary generalized osteoarthritis.

Two other findings should be noted. Kellgren and Moore found tendon nodules in the flexor tendons of the hands in a few cases; that this is a frequent finding in rheumatoid arthritis has already been shown by Kellgren and Ball,[7] but it is clear that their presence does not necessarily mean that the patient has rheumatoid arthritis. Secondly, they found that the sedimentation rate may be abnormally high, and this is a reminder that a raised rate does not necessarily indicate a rheumatoid type of arthritis, for in one-third of their tested cases the reading was between 20 and 40 mm. in the first hour (Westergren). This should discourage the routine use of gold salts in cases with a polyarthritis simply because the E.S.R. is raised.

Many questions remain to be answered: the curious localization in the terminal joints of the hands—only rarely found in rheumatoid arthritis, although always present in true psoriatic arthritis—and the discrepancy between the authors' findings and Stecher's[8] finding of a correlation between the menopause and the onset of Heberden's nodes. Both groups agree, however, that there is probably a genetic factor. Stecher and Karnosh[9] found, too, that an intact nerve supply was necessary for the production of Heberden's nodes, and this requires explanation.

The problem of treatment remains. It is important to remember that most patients with generalized osteoarthritis fear that they have rheumatoid arthritis, and a confident diagnosis, with an explanation that this condition is different and has a reassuring prognosis, is often the most important step and may be the only treatment required. At least it may save the patient from the hazard of widespread dental extraction or some other witchhunt for focal sepsis, and even from the not inconsiderable risk of gold therapy. Whether or not cortisone or, as Hollander and his colleagues[10] suggest, hydrocortisone (Compound F) will offer practical help when administered direct into the joint remains to be seen. During the acute phase this may represent a rational approach by reducing the inflammatory reaction, although one cannot be sure that this reaction is not of itself beneficial by imposing rest on the joint. Its removal is not necessarily therapeutic.

Perhaps the most important point emphasized by Kellgren and Moore is the necessity for a study of the pathology of generalized osteoarthritis in its earliest stages. If the tissue changes occurring at this stage can be clarified we shall have made a great advance in understanding. Their definition of the problem to be tackled represents the first step towards this end.

WHITHER INFLUENZA?

What is the future outlook in influenza? Where and when will it break out next? Faced with these questions, the epidemiologist would like to hide his ignorance of the inner mechanisms of global epidemiology in the retort ambiguous, the reply which gave the oracle at Delphi its reputation in the time of Hippocrates. With the isolation and serological characterization of the influenza viruses A and B, however, it has been possible to see some pattern in the epidemiology of influenza. Stuart-Harris[1] has drawn attention to the two-year periodicity of influenza A outbreaks in this

country. Since 1933, when the virus was first isolated, influenza virus A has been recovered every odd year until last year—with one exception, 1945. In view of this periodicity and the well-known tendency of outbreaks to occur in the winter-time, we may infer by simple extrapolation that the next outbreak of influenza A in this country will be in roughly one year's time. Influenza B outbreaks do not show the same clear periodicity, so that sporadic outbreaks of influenza B are possible at any time this winter; if they occur these are likely to be restricted and mild, however. Compared with influenza A, influenza B outbreaks have generally been very tame.

In a recent article in this *Journal* Isaacs and Andrewes[2] showed that the 1950–1 influenza epidemic in Europe had two sources. A small outbreak of influenza in Sweden during the summer of 1950 preceded by four to five months the epidemic in northern Europe. In the Mediterranean area the causative virus was traced back to the southern hemisphere, where outbreaks of influenza had occurred in the South African and Australian winter six months earlier. In each case the evidence for the spread of virus was provided by strains isolated by World Health Organization laboratories throughout the world and sent to the World Influenza Centre for typing. World Health Organization laboratories will be on the look-out for virus during the next eight months; in particular, a summer outbreak of influenza in Europe should provide a useful "herald patch." This attempt to anticipate influenza outbreaks will fit in well with the trial of influenza virus vaccines recently sponsored by the Medical Research Council and the Ministry of Health.

In the United States of America evidence of periodicity of influenza, which earlier paralleled the experiences in Europe, has not been at all clear in the last few years. Each winter has produced a rise in the numbers of influenza cases, but no sharp peaks in incidence comparable to our experience in Europe have been found. During the 1950–1 European epidemic virus A is known to have been widespread in the U.S., but no major outbreak of influenza occurred. In seeking an explanation of these recent differences between influenza in the two continents we may speculate on the possible epidemiological importance of national boundaries in Europe. Clearly epidemic influenza does not respect national boundaries, but a milder endemic influenza may well do so. With its extensive communications the United States may be an ideal place for the spread of influenza virus, under conditions which would be against a major outbreak but would favour a mild endemic infection producing immunity against a later epidemic. In Europe, on the other hand, minor outbreaks such as that in Sweden in the summer of 1950 might not spread widely in the absence of free communications with susceptible populations in surrounding countries. Presumably with the arrival of winter in 1950 the susceptibility of the population in Sweden and elsewhere was lowered, partly because of waning of specific immunity and partly through other (perhaps climatic) causes, and this resulted in epidemic spread. If this is so, the epidemiologist may yet be able to provide an argument in favour of a United States of Europe.

[1] *British Medical Journal*, 1945, 1, 209.
[2] Ibid., 1951, 2, 921.

THE SCHOOL MEDICAL SERVICE

In the financial year 1948–9 the cost of the school medical service was £9¼m.—about £1m. less than the previous year because of the transfer of hospital charges to the National Health Service account. Other effects of the National Health Service on the school medical service are referred to in the report[1] of the Chief Medical Officer of the Ministry of Education for the years 1948 and 1949. On the debit side there has been a falling off in the work of dental inspection and treatment, owing to the greater financial attraction of dental practice in the National Health Service, and delay in the supply of spectacles. On the credit side is the building up of a specialist service, including paediatricians, psychiatrists, and orthopaedic and ophthalmic surgeons, from which schoolchildren especially will obtain great advantage. The danger that the family doctor may be left out of the arrangements being made to improve the school medical service has been recognized by the B.M.A., and certain recommendations[2] have been made and approved by both the Association and the Society of Medical Officers of Health. As Sir John Charles writes: "The problem of bringing about a closer liaison between the school health service and the family doctor can only be solved by consultation and discussion between the doctors concerned, and it must be met in various ways according to local circumstances and personalities of the people involved."

The report is similar in form to those of previous years, much of the space being given up to quotations from the annual reports of school medical officers all over the country. There is a particularly good chapter on "The Diabetic Child" which surveys the history of diabetes in children since the discovery of insulin and describes the work of diabetic hostels. England is the only country in the world to have set up residential homes for diabetic children who cannot be looked after by their own parents. It is a great disappointment that the number of children found verminous at school inspections is falling so slowly. In 1949 very nearly half a million children in England and Wales—8% of those on the school registers—were infested. In spite of the new insecticides this figure is very little less than those of the years immediately before the war. It is of course not fair to blame the schools for infestation: the figures quoted in this report are a serious reflection on the social services generally. Some might question whether the improvements in health and education during the past fifteen years can really be as great as supposed if just as many children are verminous to-day as in 1937. Certainly the time has come when local education, health, and sanitary authorities should combine to attack infestation at its source.

Sir John Charles concludes his first report as chief medical officer to the Ministry of Education with a well-

[1] *The Health of the School Child*, 1952, H.M.S.O., London.
[2] *British Medical Journal Supplement*, 1950, 2, 111.

deserved tribute to his predecessor, Sir Wilson Jameson, whose period of office, from 1940 to 1950, "was an exceptionally trying and difficult one; thanks to his wise guidance it was also an exceptionally fruitful one."

XYLOCAINE

Xylocaine was synthesized in 1943 by Löfgren[1] and Lundquist[2] at the Organic Chemistry Institute of the University of Stockholm, and was tested clinically in the Anaesthetic Department of the Karolinska Hospital. In Britain a trial was conducted by Drs. D. Carnegie and A. J. Hewer in 1950,[3] at the invitation of the Faculty of Anaesthetists of the Royal College of Surgeons. Xylocaine has the signal advantage of acting more rapidly than any other drug of this group, yet maintaining its effect for a long period. It differs chemically from procaine and most other local analgesics through being a basic anilide, which has the formula *o*-diethylamino-2.6-dimethylacetanilide. It is a relatively non-irritant substance, it is not decomposed by boiling or by changes in *p*H, and it has no vasodilator effect; it does not affect the conjunctival vessels, nor dilate the pupil, nor cause mistiness of the cornea. The toxicity of the drug has been investigated by several workers, notably Goldberg[4 5] in Sweden and Hunter[6] in this country, who seem agreed that a total dosage of 1 g. is within the limits of its safety. Although "reactions" to the drug have been described, and the effects of accidental subarachnoid injection,[7] there has been only one death reported, so far only in the lay press.[8]

Xylocaine is prepared by the manufacturers as a solution, either alone or mixed with adrenaline in a concentration of 1 : 100,000 in 0.5% and 1% solutions, or of 1 : 80,000 in 2% solution; the toxicity of the preparation would be reduced without loss of its efficiency if the adrenaline were in a dilution of only 1 : 250,000 in both. Carnegie and Hewer found that 0.5% solution maintained analgesia for three hours when given alone, and for almost six hours when combined with 1 : 200,000 adrenaline. The drug is used in a strength of 0.5 or 1% with adrenaline for infiltration analgesia, and of 1% or 2% for nerve blocking, caudal analgesia, or epidural analgesia. A 2% hyperbaric solution has been prepared for spinal analgesia. Xylocaine also has a surface action, and its use in a 2% solution for bronchoscopy has been described,[3] though it was not as satisfactory as 10% cocaine. The 4% solution appears to be an improvement, but only a few cases have been reported.[9]

It is the action of xylocaine in the epidural space that emphasizes most strongly its superiority to other local analgesics, and the improved results reported by Drs. Ablett, Dawkins, and Steel[10] will be corroborated by other anaesthetists. The more certain effects of xylocaine in this site may lead to a revival of interest in epidural analgesia.

1 *Studies in Local Anaesthetics—Xylocaine*, Stockholm, 1948.
2 *Svenska Kem. Tidskr.*, 1946, **58**, 206.
3 *Lancet*, 1950, **2**, 12.
4 *Svenska Tandlak. Tidskr.*, 1947, **40**, 819.
5 *Svenska Läkartidn.*, 1948, **45**, 107.
6 *Brit. J. Anaesth.*, 1951, **23**, 153.
7 Howat, D. D. C., *Lancet*, 1952, **1**, 81.
8 *Daily Mail*, London, December 20, 1951.
9 Blayney, A. McA., *J. Irish med. Ass.*, 1951, **29**, 11.
10 *Anaesthesia*, 1951, **6**, 159.

EPIDEMIOLOGY OF CEREBROSPINAL FEVER

The statistical study of meningococcal infections must be approached with caution. In the early days of notification of cerebrospinal fever in this country the number of deaths from the disease exceeded the number of notifications, which is a clear indication that notification was grossly defective at that time. Deductions made from the records of recent years must allow for such administrative changes as the introduction of correction of notifications in 1944 and the change in nomenclature from cerebrospinal fever to meningococcal infections in 1950. These difficulties are multiplied when attempts are made to compare the incidence of the disease in a large number of countries with differing administrative systems and wide variations in the efficiency of the medical services. Nevertheless the study of the occurrence of infectious diseases throughout the world has become indispensable for a full understanding of their epidemiology, and Freyche's[1] report to the World Health Organization on the prevalence of cerebrospinal fever since 1939 is of great interest.

For the last twenty to thirty years the disease has been more common in the regions situated to the south of the North African desert belt than in any other part of the world. In Nigeria in both 1949 and 1950, and in the Sudan during the first half of 1951, there were more cases of cerebrospinal fever than in the whole Continent of Europe in 1940, when exceptionally large numbers of cases were notified. Each country experiences, in addition to the seasonal rise and fall, a periodic recurrence of high incidence at intervals from eight to twelve years. It appears probable that the crowding and migration of population that occur during the military and industrial mobilization of wartime have played an important part in determining the timing and size of some of the periodic waves. In England and Wales and a number of European countries the heaviest incidence of recent years was in 1940–1. The corresponding epidemic years in the United States were 1943 and 1944. There was a return of high incidence in France in 1945 and in the Netherlands in 1946. The timing of seasonal variations in different countries in the Northern hemisphere is remarkably similar, the crest of the wave being in the months of February, March, and April, and the trough between June and November. This makes it difficult to believe that the fundamental cause of seasonal changes in incidence can lie in such environmental influences as sand winds or movements of population that may be peculiar to any one locality. Realizing the danger of estimating case fatality from the available statistics, Freyche uses the term "statistical mortality rate" to indicate the relation between deaths from the disease and notifications. It has been noted in the past that this rate varies inversely with the seasonal variations in incidence, and it is shown in this report that it also varies inversely with the cyclical variations in incidence, but the reasons for this are not clear. It may be that in epidemic times the number of milder cases notified may be greater than in periods of low incidence, but this is probably not the whole explanation of these variations.

1 *W.H.O. Epidemiological and Vital Statistics Report*, 1951, **4**, 311.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

THE PROS AND CONS OF IMMUNIZATION—I

BY

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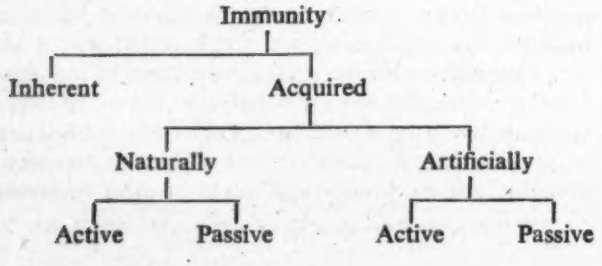
The articles that have hitherto appeared in this series have dealt almost exclusively with the diagnosis and treatment of established clinical diseases and infections. My task is to discuss the specific measures which the family doctor may use or recommend for the *prevention* of infection, in particular the use of vaccines and antisera to protect against the more common fevers of childhood and adult life—for example, diphtheria, scarlet fever, measles, whooping-cough, influenza, tuberculosis, typhoid fever, and smallpox. When we consider preventive measures against infection, the unit is usually the whole family rather than any individual member of it. A schoolchild has a sore throat which may be diphtheria or the early stages of scarlet fever and the doctor must decide what he can do to protect the other members of the family. Or mother has an attack of diarrhoea which may be food-poisoning or bacillary dysentery or the beginning of paratyphoid fever, and again measures must be taken to prevent spread of the infection to the rest of the family. Or, again, the doctor may be asked about the possibility and advisability of protecting a young family against whooping-cough or measles or smallpox before there has been any exposure to the risk of infection.

The control or prevention of infection in a family group may be considered under three main heads: elimination of the reservoir of infection, blocking the spread of the infecting organism, and raising the resistance of the susceptibles. One or all of these measures may be applied according to the circumstances of the case. The reservoir may be eliminated by early recognition and isolation of the primary case in the family, or by active antibiotic therapy which quickly rids the tissues of the infecting germs; spread of the organism may be prevented in the case of intestinal infection by instruction about personal hygiene and avoidance of food handling; and resistance may be raised by the use of specific vaccines and antisera to give "immunity" to the susceptibles.

What Is Immunity?

The medical student often seems to have difficulty in grasping the principles of immunity. The accompanying diagrammatic schema is often used to illustrate the different ways by which resistance to infection may be acquired, and an understanding of these principles is essential for a rational use of the artificial means of protection.



Naturally Acquired Immunity

Apart from an inherent immunity, which may be due to a genetic resistance to particular diseases or to the protection afforded by healthy and intact tissues, the individual may acquire by natural means an immunity of varying duration to specific infections. Thus the infant seems to be immune to such infections as measles, diphtheria, scarlet fever, and chicken-pox for the first few months of life. The explanation of this immunity is that antibodies to these various infections have been "manufactured" by the mother and passed, via the placenta, into the blood of the infant. So long as the specific antibodies persist in sufficient concentration the infant is protected against the corresponding infection, but these antibodies have not been produced by the child's tissues, so that they gradually disappear and are not replaced by fresh antibodies. This is called passive immunity and obviously gives protection for only a short period of time—usually for three to six months. The duration of this passive immunity will have a direct relation to the concentration of antibody in the mother's blood, and if the mother has no antibody to any particular pathogen, as often happens with whooping-cough and sometimes with diphtheria, the infant will be susceptible from birth to these infections.

When, on the other hand, a child develops an attack of measles at the age of 3 or 4 years he (or she) manufactures antibodies to the measles virus and is, as a result, resistant to further attack. This is an example of active immunity, which lasts for a much longer period than does passive immunity, although there are notable exceptions, like influenza and the common cold, pneumonia, and streptococcal infections. Here the lack of persistent immunity may be due to the superficial nature of the infection, as in the common cold and possibly influenza, so that the antibody factories throughout the body are not stimulated into activity; or it may be due, as in the case of pneumonia and streptococcal tonsillitis, to fresh attacks with new and different serological types of the pneumococcus or streptococcus against which the body has not acquired immunity. A further point about naturally acquired active immunity is that many of us become resistant to infections like scarlet fever and diphtheria as a result of repeated subclinical infection. Consequently the past history alone does not tell us whether an individual is or is not susceptible to these infectious diseases, but certain skin reactions, like the Dick and Schick tests, may give us the answer.

Artificial Immunization

If immunity is to be induced artificially the two main procedures are again passive protection and active immunization by agents deliberately introduced into the tissues; there is, in addition, the procedure of inducing a modified infection. Passive immunity is obtained by

the injection of either an antiserum prepared artificially in the horse or other animal against the infecting micro-organism or its active exotoxin, or the serum of a patient who has already had the disease. This antiserum confers an immediate specific resistance which lasts only until it is all excreted, usually in a matter of two to three weeks, depending on the dose of serum and the concentration of antibody. For example, tetanus antitoxin is given to an injured person to protect him against the risk of tetanus while his wound is being treated surgically, and if the injury is a severe one the dose of antitoxin may be repeated weekly for several weeks.

Active immunity is induced artificially by the injection of an antigen in the form of vaccine containing the intact micro-organism or virus in a modified form—for example, typhoid or yellow fever vaccine—or as toxoid, which is the exotoxin of the organism rendered non-poisonous by treatment with formalin—for example, diphtheria toxoid. Two or more injections of the antigen are usually needed to induce a sufficient degree of immunity, since the first injection (primary stimulus) does not evoke much antibody but prepares the antibody factories for a more active response to further injection (secondary stimulus). The immunity takes some weeks to develop, but persists for a much longer period—several months to several years—than that induced by the injection of an antiserum. As it wanes it can be quickly raised again by a small "booster" dose of the antigen. It is, however, important to warn the inoculated individual or his relatives that no form of artificial immunization, with the possible exception of yellow fever vaccine, will ensure complete protection against any particular infectious disease.

Active immunity may also be obtained by deliberately inducing a modified attack—for example, vaccination with vaccine lymph produces the disease vaccinia which gives protection against the more serious infection smallpox; or injection of convalescent measles serum in a child who has been exposed to infection may result in a mild attack of the disease which gives the child an active immunity without the upset associated with the unmodified attack.

The Risks of Reactions

Any form of immunization should, before it is recommended for general use, satisfy at least three criteria: it must be safe, it must be practicable, and it must be effective. Under the Therapeutic Substances Act all biological preparations issued for distribution must conform to certain requirements and must satisfy tests of sterility, potency, and absence of toxicity. These tests therefore ensure a high degree of safety in the use of sera and vaccines. However, reactions to the injection of these substances do sometimes occur and the practitioner must be aware of the risks.

The Syringe and Needle

It is, in the first place, essential that the syringe and needle used for giving an injection should be sterile. boiling for five minutes in a saucepan immediately before use is the safest procedure. Ideally, the syringe and needle should be boiled between each injection, but if the doctor is giving a number of injections of the same material in a household he may adopt the method recently recommended by Fleming and Ogilvie.* Just enough material for one injection is taken into the syringe. After the injection, with the plunger kept firmly home against the end of the barrel, the needle is withdrawn and, while still attached to the nozzle of the syringe, is immersed in boiling water for 10 seconds. This procedure sterilizes the needle. The syringe has not been contaminated and the doctor can proceed with the next injection without further sterilization.

If rubber-capped bottles are being used the top should be cleaned with spirit, and then with tincture of iodine, or the bottle may be covered with a metal cap on the under surface of which is a pad soaked in disinfectant. For injection of vaccines and toxoids a hypodermic needle of size 12–16 with a long bevel point should be used. For antisera a serum needle size 1 is best. It is most important that the needle should be sharp, and before the injection the point should be inspected to see that it is not turned. Needles of too fine a bore should not be used, as they may bend or break during the injection.

Reactions to Vaccines

Injections of vaccines and toxoids are best given in the deep subcutaneous tissues—for example, in the upper arm near the insertion of the deltoid or in the middle of the outer aspect of the thigh. The skin is sterilized, preferably with 2% iodine or 70–75% alcohol, a fold of the skin is picked up between thumb and first finger, and the needle is then injected with a stabbing movement into the fold of the skin. Reactions of two kinds may occur—local or systemic. The local reaction, coming on in two to three hours, is due to the irritation produced by the foreign material, and is more often present after the injection of bacterial vaccine, particularly T.A.B. vaccine, than after toxoid. If the toxoid contains alum a fibrous nodule and occasionally a sterile abscess or cyst may form, and therefore the material should not be injected too superficially. Constitutional symptoms such as headache, malaise, nausea, and pyrexia are again more common after an injection of bacterial vaccine like T.A.B. and may last for one to two days. Prophylactics which may be expected to produce some constitutional upset should be given in the late afternoon, and the individual should be advised to take 5–10 gr. (0.32–0.65 g.) of aspirin before going to bed. Very rarely a condition of protein shock with rigor and high temperature may come on within half to one hour after an injection if some of the material has accidentally entered a vein.

A more serious complication of prophylactic injections has recently come to light in the form of post-inoculation poliomyelitis. Certain cases of poliomyelitis have developed within a month of the injection of prophylactics like A.P.T. (alum-precipitated toxoid), or combined diphtheria toxoid and pertussis vaccine, and the paralysis has usually been in the inoculated limb, mostly an arm. Statistical analyses have indicated that this association is more than a chance coincidence, and the most likely explanation is that the injection has activated a pre-existing latent infection with the poliomyelitis virus and localized it, perhaps because of the tissue trauma, in the motor nerve cells associated with the affected muscles. This complication may best be avoided by giving the injection subcutaneously rather than intramuscularly, by using prophylactics that are least likely to produce local tissue damage—for example, formol toxoid rather than A.P.T.—and by suspending inoculation of children in the susceptible age group—that is, over 1 year of age—in an area where poliomyelitis is known to be occurring at the time.

British Medical Journal, 1951, 1, 543.

Reactions to Antisera

The injection of antiserum derived from horse or other animal may cause either a sudden anaphylactic shock or a delayed serum sickness. Anaphylaxis is extremely rare in the human subject, and in its fatal form is most likely to occur in persons who have some inborn or acquired predisposition to allergic disorders like asthma, eczema, or urticaria. Before giving an injection of antiserum, therefore, the doctor should inquire about a personal history of asthma or hay-fever, particularly from contact with horses, or any family or personal history of allergic disorders. If in doubt an intradermal injection of 0.1 ml. of the serum diluted 1 : 100 should be given; this will produce a local wheal and erythema reaction in a sensitized person, who may then be partially and temporarily desensitized by repeated small injections of the serum.

Serum sickness, developing seven to ten days after the injection of the antiserum, and characterized by an urticarial rash, joint pains, and fever, was common when crude unconcentrated antitoxin was used in large doses. The introduction of concentrated antisera, and later of enzyme-digested "refined" antitoxin given in small doses, has reduced the incidence of serum sickness to less than 3%, so that this complication is now a rare hazard. Antihistaminic preparations locally or systemically will usually give relief. The patient who has had an injection of foreign protein such as horse serum within the past three to six months may develop an acute anaphylactoid reaction, with dyspnoea, pains in the chest, and oedema of the face, within a few hours of receiving a second injection. This type of reaction, while alarming, can usually be prevented or controlled by an injection of 1 ml. of 1 : 1,000 adrenaline. With convalescent human serum, particularly if it is prepared from a pool of donors, there is the small risk of homologous serum jaundice coming on two to three months after the injection. This risk can be largely prevented by "sterilizing" the serum with ultra-violet light and is practically non-existent with concentrated gamma globulin. Injections of whole blood should not be given, because they may induce the formation of rhesus antibodies.

Prevention versus Cure

It is sometimes said in these chemotherapeutic days that there is no advantage in trying to prevent infections that can be easily cured with modern antibiotics. Why, for example, subject people to the inconvenience of T.A.B. inoculations when typhoid fever can be treated effectively with chloramphenicol? A similar argument was used many years ago for diphtheria, when it was hoped that the use of a specific antitoxin would bring this infection under control, but, in spite of all efforts at earlier diagnosis and better therapy, some 60,000 cases of diphtheria, and around 3,000 deaths, continued to occur every year in England and Wales until large-scale immunization was introduced in 1940. As a result there were 957 notified cases of diphtheria and only 49 deaths in 1950, while the saving in hospital beds and in expert medical and nursing care has greatly reduced the total expenditure on this once dreaded infection. Thus it has been calculated that the dramatic reduction in the incidence of diphtheria has meant a saving to Scotland of something over £300,000 a year, while reduction from nearly 10,000 to a few hundred cases annually represents a saving of about 750 hospital beds on every day of the year and an annual saving of some 250 full-time nurses and a proportionate number of doctors, hospital domestics, etc.

Furthermore, in diseases with insidious onset, such as typhoid fever and whooping-cough, the damage to the patient and his contacts has already occurred before effective treatment can be given. There is little doubt, therefore, that where specific prophylaxis is safe, practicable, and effective prevention is always better than cure. On the other hand, certain infectious diseases, such as lobar pneumonia, cerebrospinal meningitis, and typhoid fever, tend to occur rather sporadically in civilian practice and to affect only a small proportion of the population at risk, so that even if effective prophylactics were available large-scale indiscriminate immunization would not be thought profitable. Where, in special circumstances, the risk is considerable and the prophylactic effective, as happens with typhoid fever among troops on active or foreign service, then obviously prophylaxis is again better than cure.

The specific measures that may be used to protect against particular diseases, and the indications for their use, will be discussed in the next article in this series.

THE INCIDENCE AND PROGNOSIS OF CEREBRAL PALSY

AN INTERIM REPORT

BY

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In Leeds County Borough a special day school with 140 places caters for all types of physical handicaps other than defects of sight and hearing. The more severely handicapped from cerebral palsy attend here, and in addition it is expected that a residential school for the younger cerebral palsy children will be opened in 1952.

Incidence

The survey of cerebral palsy occurring between the ages of 3 and 16 in Leeds was begun in 1947. During that year an assessment was made of all the children on the school roll known to be suffering from cerebral palsy, including those attending ordinary schools as well as special schools. It did not include children already notified to the mental health authority as ineducable and many children under 5. All the children have been examined by Mr. J. M. P. Clark, orthopaedic consultant to the local authority, and by me. Those attending the day school for the physically handicapped have also been examined by Dr. J. D. Pickup, late lecturer in paediatrics, Leeds University.

The first survey in Leeds as published in the Annual Report of the School Medical Officer for 1947 mentioned 97 children, and the annual report for 1949 shows 136. The present figure is 141. The reasons for the rise in figures for Leeds appear to be as follows:

1. The knowledge that some plans were in preparation for the young cerebral-palsied resulted in more young children being referred from the paediatric and orthopaedic departments of the local hospitals. The latest ascertainment figure includes 19 children between 3 and 5 years of age and five not included in the survey who are under 3 years old. Since the school population includes very few children under 5 at the present time, a more

accurate incidence in proportion to the school population might be obtained by omitting the 19 children aged 3 to 5. Again, since the school population includes a minority of children over the age of 15 it would be more accurate to exclude those aged 15 to 16. The number would thus be reduced to 107—that is, 1.6 per 1,000 of the school population, reckoning the school population of Leeds as 66,548. The known figure for the whole country is 1 to 2 per 1,000. Sheffield reports 1.9, and Birmingham 1 per 1,000 (*British Medical Journal*, 1950, 2, 1051) of the school population and later 0.9 per 1,000 (Asher and Schonell, 1950). The American figure is 4 to 5 per 1,000 (Phelps, 1941).

2. Another factor causing the rise is the inclusion of a number of mildly afflicted children, hitherto undiagnosed. These came to light owing to the generally increased interest in cerebral palsy amongst all members of the school health service, who referred for investigation an increasing number of children showing slight symptoms. The reason given to parents and teachers for a child's clumsiness, slovenly speech, and relative dullness compared with his siblings produces a much more sympathetic attitude, and an acceptance of the child's disability as such rather than as original sin. In this more favourable atmosphere the child often improves considerably.

3. The third factor that produces a rise in the numbers recorded between 1947 and now is that the present list includes 14 children notified as ineducable during that time. Eight were notified before starting school; the other six proved ineducable after a trial in school or incapable of further education after profiting for a time.

Value of a Pre-school Clinic

A pre-school clinic has been started for children under 5 years, and for those over 5 years who are too handicapped to benefit yet from a day special school. The children attend twice weekly for physiotherapy and speech therapy (if required), and are provided with transport if necessary. While far from ideal in frequency of treatment owing to the difficulty in obtaining sufficient attendance of skilled personnel, the clinic has proved of great value.

The children make progress, and parents are taught how to help the children at home and are encouraged by meeting other parents in the waiting-room with similar problems. Much useful information is exchanged and a happy atmosphere prevails. Perhaps the greatest value of the pre-school clinic is that the observations of skilled staff over an appreciable period are available for the difficult task of assessing the educability of severely handicapped children. In the light of reports from the speech therapist and the physiotherapist, along with a Terman–Merrill assessment of intelligence where possible, the medical staff responsible can send the child to school with some confidence that he will profit there both educationally and physically, or they may decide that there is evidence from prolonged observation that the child is ineducable—a decision that could not possibly be arrived at from one or two interviews only. Before the pre-school clinic was started valuable places in the day special school had to be devoted to giving these children a trial. This wastage is now largely avoided.

Type of School Suited to Children with Cerebral Palsy

Unlike the voluntary schools, whose screening personnel merely accept or reject a child as suitable or otherwise for that particular class of school, a local authority has to make a recommendation regarding the place into which the child will fit. Table I shows how 141 children aged 3 to 16 with cerebral palsy have been placed.

Thus about half the children with cerebral palsy occupied a place in a school for the physically handicapped for part if not all of their school life.

TABLE I.—*The Placing of 141 Children Having Cerebral Palsy*

Secondary grammar school	2
Secondary commercial school after day school for the physically handicapped	1
Primary or secondary modern school	37
Primary or secondary modern school, after day school for the physically handicapped	17
Private school after day school for the physically handicapped	2
Day school for the partially sighted, after day school for the physically handicapped	1
Day school for the educationally subnormal, after primary school	5
Day school for the educationally subnormal, after day school for the physically handicapped	10
Private school instead of school for the educationally subnormal	1
Residential school for the physically handicapped	1
Day school for the physically handicapped	21
Home teacher advised	2
Awaiting school for the physically handicapped (all under 6 years old)	14
Under 5 years old, and probably fit for primary school at 5	4
Under 6 years old and probably ineducable	6
Notified to the Mental Health Authority as ineducable	17

Distribution of Intelligence

Table II shows the distribution of innate intelligence amongst the group. The test used was the Terman–Merrill revision of the Stanford–Binet tests, and all the tests were applied by me.

While realizing the difficulties of obtaining a valid intelligence quotient from children suffering from severe cerebral palsy, the findings given below may be of some value, particularly as more than half the children are not so handicapped as to require provision for special physical education.

TABLE II.—*Distribution of Intelligence in the Cerebral-palsy Group (Terman–Merrill I.Q.)*

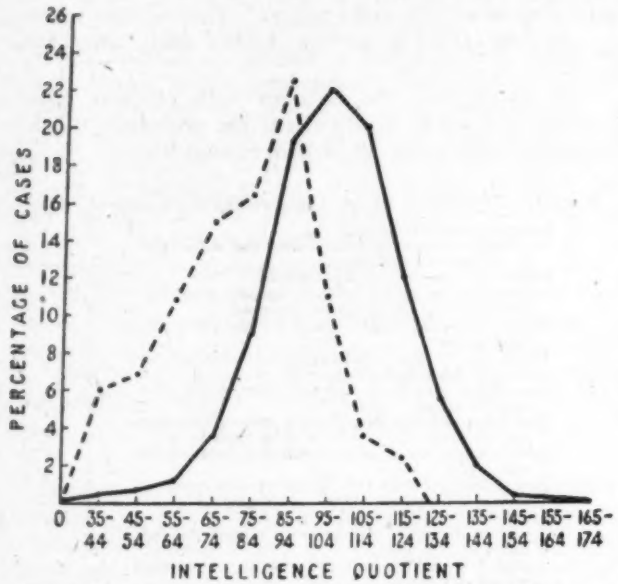
Less than 35	6 (4·5%)	85–94	30 (22·6%)
35–44	8 (6·0%)	95–104	15 (11·3%)
45–54	9 (6·8%)	105–114	5 (3·8%)
55–64	15 (11·3%)	115–124	3 (2·2%)
65–74	20 (15·0%)	Over 124	Nil
75–84	22 (16·5%)		

Completed	133
Gone to work at 15 and change of address untraced	1
Probably ineducable; no figure possible as yet (under 6 years)	4
Probably educable; no figure possible as yet (under 4 years)	2
Probably educable; no figure possible as yet (under 6 years)	1
Total	141

The difference in the distribution of intelligence between the cerebral-palsied group and a normal group is striking and disagrees markedly with the American estimate (Phelps, 1938) that 70% of children suffering from cerebral palsy have intelligence spread over the same distribution as the general public and that many of these children have a high-grade intelligence when their disability will allow them to use it.

The graph on the next page shows the normal distribution of intelligence compared with the distribution in 133 children suffering from cerebral palsy. It appears that far fewer children fit for an academic or technical type of education will be found in a group of children with cerebral palsy than in a normal group.

The highest proportion of children with cerebral palsy come within the dull group. Those of normal and supernormal intelligence as a whole form only 24.8% as



Graph showing normal distribution of intelligence (Terman–Merrill I.Q., ——) compared with distribution of intelligence in 133 children suffering from cerebral palsy (Terman–Merrill I.Q., ••••••••).

against 75% in the normal population. Conversely, 33.3% have intelligence quotients under 70, whilst only 3% of the ordinary population come into this category.

This distribution of intelligence agrees closely with the findings of Asher and Schonell in their summary of 354 cerebral-palsy children in Birmingham and district.

TABLE III.—*Distribution of 141 Estimated Intelligence Quotients of Cerebral-palsy Groups Compared with Asher and Schonell's Estimation and With the Normal Child Population*

I.Q. Level	Present Group		% Asher and Schonell	% Normal Population	Usual Nomenclature	Suitable Provision
	No. of Cases	% of Group				
130	0	0	0·6	1	Supernormal	Ordinary school
110–129	4	2·8	3·4	22		
90–109	31	22	20·1	52	Normal	
70–89	51	36·2	26·8	22	Dull	
50–69	30	21·3	22·9		Feeble-minded	Special school for E.S.N.
25–49	12	8·5	10·7	3	Imbecile	Occupation Centre
Below 25	5	3·5	11·6		Idiot	Institution
Not yet assessable	8	5·7	3·9			

The Ineducable Children

Parents may apply for the admission to a residential colony of an ineducable child whom they are unable to care for at home. In addition to a residential colony, Leeds is fortunate in possessing two day-occupation centres under the care of the mental health authority. Most children who are notified as ineducable have the opportunity of attending a day-occupation centre. Transport is provided, and quite severely handicapped children are cared for. The regular regime on graded nursery-class lines for all ages proves beneficial in many ways. The children are happy to be with others and become more independent and more socially acceptable. Parents agree to a child's notification less reluctantly when some training is still provided for the child and when some solution is offered of the domestic problem often created by having a severely handicapped child in the home all day.

When a child appears likely to be ineducable it is advisable to tell the parents early that there are doubts about how much progress the child will make. If the parents can be helped to accept the truth about the child's disabilities, and their confidence in the doctor can be kept, much unhappiness will be avoided. They will not suffer from feelings of resentment that "Authority" has not given their child a fair chance, nor from disappointment as a result of seeking a multitude of opinions or quack remedies. If difficulty arises a further six-months delay may convince those hitherto unconvinced when the greater progress of other children in the pre-school clinic is seen. A visit to an occupation centre will often clinch matters. It should always be pointed out that should the child make unexpected progress it is possible to cancel a notification.

Employability

The placing of cerebral-palsied children in suitable employment when they leave school presents its own difficulties even in a city, such as Leeds, whose industries are avid for juvenile labour. When one or both hands are affected, when speech may still be slightly abnormal, when the intelligence is too poor to allow of clerical work, when there is accompanying epilepsy, or when some of the emotional instability so typical of cerebral palsy may still remain, the problem is a difficult one. A patient with severely crippled legs, or an educationally subnormal child with strong limbs, is much easier to place than one with the mixture of disabilities apt to be found in the spastic child even though each disability may not be severe in itself.

Of 17 educable children who have left school and are over 16 years old, one is having further training in a private "commercial" school, one is working satisfactorily since leaving school, two have just been satisfactorily placed, two are working for relatives, three have had several changes of job and are difficult to place satisfactorily, four are at long-stay training establishments—e.g., Alton, Oswestry—with a view to home industry such as shoe-repairing, and four are at home unable to work at all.

Of eight children aged 15 leaving school at that age, and therefore all comparatively mildly handicapped and having attended ordinary school, four are working satisfactorily, one has just been satisfactorily placed, one has had several changes of job already, and two have changed addresses and cannot be traced.

From these small groups of children who have left school it would appear that any complete schemes for dealing with cerebral palsy must include sheltered workshops and home industries.

Conclusions

The incidence of cerebral palsy in Leeds children aged 5 to 15 is 1.6 per 1,000 of the school population.

A pre-school clinic is a vital part of any scheme for the treatment and education of children suffering from cerebral palsy.

The condition of half the children has required that part or all of their school life be spent in a special school for the physically handicapped.

Occupation centres do valuable work in rendering the ineducable children more socially acceptable.

The distribution of intelligence is lower than in a similar group of normal children.

The placing of these children in suitable work presents considerable difficulty. Home industries and sheltered workshops are needed for a complete scheme.

Thanks are due to Mr. J. M. P. Clark for much helpful criticism and advice, and to the Leeds education authority and to Dr. I. G. Davies, school medical officer and medical officer of health, for permission to publish this report.

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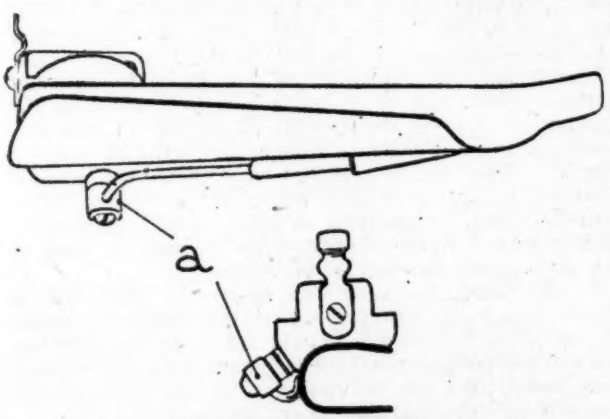
Preparations and Appliances

A LARYNGOSCOPE BLADE FOR INFANTS

Dr. R. BRYCE-SMITH, first assistant, Nuffield Department of Anaesthetics, University of Oxford, writes: Difficulty is often experienced in exposing the larynx of a newborn baby by those who are not adept, and for this reason intubation in asphyxia neonatorum is rarely practised by the obstetrician or general practitioner. A laryngoscope blade has been designed to give a satisfactory view of the cords whether it is introduced anterior or posterior to the epiglottis, or with the head either extended or flexed. Most other blades for children are not intended for the newborn, and in my hands have not given completely satisfactory results.

The blade has a three-quarter-circle cross-section for the greater part of its length (7.5 cm.), and tapers from a maximum width of 1.8 cm. at the proximal end to 1 cm. at the



"a" represents light carrier.

tip. The distal 2.5 cm. is curved slightly, and although it has an open section it is guarded on the left side to retract the tongue. There is sufficient overhang on the open side to prevent the lips from obscuring the view. The broad flat lower surface does not damage the gums. Though intended primarily for newborn babies, the blade is made long enough for use on children up to 3 years of age. Over a period of six months it has given satisfactory results in this range and has been of value in children with cleft-lips and cleft-palate.

The bulb is mounted on a detachable Melbourne-type light carrier for ease of sterilization and replacement. The blade fits any Longworth laryngoscope handle.

I am indebted to Mr. Richard Salt, of the Nuffield Department of Anaesthetics, for his help in developing and designing this blade, which may be obtained from the Longworth Scientific Instrument Company, Thames Street, Abingdon.

Reports of Societies

CONSERVATIVE TREATMENT OF THE DISK SYNDROME

At a meeting of the Section of Physical Medicine of the Royal Society of Medicine, held at 1, Wimpole Street, W.1, on January 9, there was a discussion on "The Conservative Treatment of the Disk Syndrome." Dr. H. F. TURNEY, president of the Section, was in the chair.

Dr. E. J. CRISP, who opened, said that the lumbar disk lesion—a lesion which knew no age limit—was the commonest cause not only of sciatica but of acute and chronic low back pain. Though the disk was a comparatively avascular structure, he believed that repair of annular tears could take place, though slowly, by vascularization from the adjacent spongiosa or from extradural vessels.

Terms such as "slipped" or "prolapsed" disk were most misleading: disks could not slip and seldom actually prolapsed. The usual lesion was an incomplete annular tear resulting in a postero-lateral bulge of greater or lesser degree. Some idea of the extent of the lesion might be deduced from the clinical picture. With a small annular tear, especially if accompanied by injury to the ligamentum flavum, the lumbar spine was usually held in tight lordosis by protective muscle spasm, little or no forward flexion being possible. Conversely, if there was a large posterior protrusion the lumbar curve would be reversed, and though forward flexion might be possible the patient would be unable to stand upright.

Conservative Measures

The object of treatment was to allow any protrusion to reduce, inflammatory reaction to subside, and repair to take place. Possible methods of treatment included bed rest, plaster jacket, traction, manipulation, epidural injection, physiotherapy, and spinal brace, etc. Cases of average severity usually did well with complete bed rest for three or more weeks. But quite a number failed to respond, usually because complete rest was impracticable. The plaster jacket was a much more effective method of treatment: it splinted the back, allowed repair to take place, and was good for the morale, as the patient could be ambulatory. It was essential to wear the jacket for two to three months, and a spinal brace for a similar period subsequently.

The case with the reversed lumbar curve could often be relieved dramatically by sustained traction on the traction table, the protrusion reducing and the lumbar spine regaining its normal shape; after that a plaster jacket was applied. If traction was not available the protrusion reduced equally well but more slowly in a plaster jacket, though it was necessary to remove the jacket when reduction had occurred and apply a new one with the lumbar spine in the corrected position. Manipulation was contraindicated in the acute stage, but was often effective for the chronic case or for the relief of residual pain following immobilization in plaster. Sustained traction might be equally effective for this type of case. Short-wave therapy for the relief of pain and inflammation, and hyperextension exercises to strengthen the sacrospinalis group of muscles, were rational and valuable physiotherapeutic measures, but they should not be used to the exclusion of rest, but rather as supplementary measures in the resistant case. Exercises which flexed the lumbar spine should be avoided, and lumbar flexion allowed to return spontaneously. The vast majority of patients with lumbar disk lesions could be relieved by conservative methods if sufficient attention were paid to details.

Cervical Disk Protrusions

Dr. M. KREMER considered that the commonest cause of brachial neuralgia was probably a lesion in relationship with the shoulder-joint. Where a cervical disk protrusion

was the cause some neurogenic symptom or sign would be present. The pain in the early stages was caused by ligamentous lesions and occasioned by spasm of the cervical muscles. Later, when the protruded fragments of disk impinged upon one of the cervical nerves, radicular pain appeared—both a distally shooting superficial pain and a more proximal aching myotonic pain in the muscles supplied by the affected segmental nerve. Paraesthesiae in the peripheral distribution of the affected nerve were common. Examination would disclose hypotonia, wasting, and eventually weakness of the muscles supplied by the involved nerve, and diminution of the tendon reflexes was common. Objective sensory disturbance was, however, rare. Radiological examination of the cervical spine in such cases would often show narrowing of disk spaces and osteoarthritic change, but the significance of these *x*-ray changes was far from clear, since identical changes might be present in the absence of symptoms. In treatment rest was all-important. Ideally this should be in bed in a half-sitting position, the head supported on pillows with a sandbag on each side to prevent lateral movement, and a pillow beneath the knees to facilitate the maintenance of the sitting position. The weight of the arms should be carried on pillows. Adequate doses of analgesic drugs were required, morphine being given in the early stages if necessary. Later a mixture containing two or three compound codeine tablets with half a grain (32 mg.) of codeine phosphate added was useful. This was given four-hourly by day, and at night 15 to 20 minims (0.9 to 1.2 ml.) of "nepenthe" was added. Basal sedation with amylobarbitone, 1 gr., was also useful. Heat applied to the shoulder by means of an electric pad might be helpful, but other forms of physiotherapy were contraindicated.

If pain continued for two to three weeks in spite of this regime traction was applied to the neck by means of a Crile halter to which was attached a weight of 6 to 14 lb. (2.72 to 6.35 kg.), the traction being maintained for three to four weeks. Should pain then recur a plastic collar should be provided to limit neck movement. Also if bed rest was impossible a collar must be fitted and analgesics provided.

Central Protrusions in the Elderly

Central protrusions of the cervical disks were a common cause of mild spastic paraplegias in older people, often without sensory change. They caused symptoms by traction on the dentate ligaments, obstruction to the anterior spinal artery, and friction during spinal cord movements. Treatment was by traction, and later a plastic collar. The results were often very satisfactory. Surgery should be conservative, decompression followed by the fitting of a collar being sufficient.

After the contributions of the opening speakers there was a short discussion.

The Food Standards Committee of the Ministry of Food has considered and adopted a report on lead in foods. This states that lead is one of the most widespread and serious of the metallic contaminants of food and drink. Many foods and water contain naturally small amounts of lead; shell-fish may ingest and absorb lead compounds present in sea and estuary water; and lead can be inhaled in atmospheric dust. Some of these sources are uncontrollable but others are attributable to human agency and can be regulated. Lead arsenate is used as an insecticide for spraying apple and pear trees and occasionally for spraying soft fruit. Contamination from this source is not of course confined to the raw fruit but is liable to occur whenever these fruits or products derived from them are used in the preparation of foods—e.g., in the manufacture of cider, of apple pectin, and of soft fruit jams containing apple pectin. Contamination from containers is liable to arise with canned foods or where lead pipes are used to convey water, beer, cider, etc. The extent of contamination of canned meats varies according to the type of container, there being a higher rate of contamination from cans with vent holes which require soldering.

Correspondence

Because of the present high cost of producing the Journal, and the great pressure on our space, correspondents are asked to keep their letters short.

Male Infertility

SIR,—The letter from Dr. F. N. Valdez on this subject (January 12, p. 106) cannot be allowed to pass without comment. I have little desire to question the principles and practice of Roman Catholic theology, but I feel that to regard the production of a seminal specimen *for the purpose of investigating male fertility* by masturbation as a perversion of nature is surely ludicrous, especially as that theology rightly regards reproduction as a cardinal duty of the married couple. If reproduction is so important a duty, then clearly the institution of measures to promote it, when unaided it seems to fail, is equally important. That masturbation is in fact a perversion of nature is, of course, open to grave doubt, if only on the basis of the frequency of its occurrence (see A. C. Kinsey, W. B. Pomeroy, and C. E. Martin, *Sexual Behaviour in the Human Male*, 1948) in human males and in monkeys. In any case, the theological prohibition is clearly aimed at masturbation and other sexual acts employed for the purpose of obtaining pleasure but without reproduction. Masturbation for the production of a seminal specimen for medical examination is obviously not for pleasure—and, indeed, is more or less distasteful to many men. In my experience Roman Catholics have nearly always been able to obtain sanction to produce a masturbation specimen when proper application has been made to the priest.

It scarcely need be reiterated—for the point has been discussed often before—that seminal specimens collected by condom are utterly worthless for fertility estimation, while coitus interruptus is seldom of greater value, owing to the impossibility for most men to exercise the required control and acrobatic agility to ensure the entire ejaculate passing into the specimen jar. To imagine that the study of testicular biopsies and the estimation of urinary androgens and gonadotrophins will be of much help in establishing the fertility of men, in the absence of seminal examination, shows complete detachment from reality. The effort alone required to perform these studies, as compared with seminal analysis, is prodigious and obviously prohibitive, while entirely normal results from all three could be quite compatible with complete sterility as, for example, in cases of aspermia due to blockage of the ducts.

If Dr. Valdez is faced with insuperable difficulties in determining male fertility because of his inability to obtain masturbation specimens in certain cases, may I suggest that he will find the post-coital test far more simple and far more informative than all the testicular biopsies and hormone estimations ever could be?—I am, etc.,

London, W.C.1. G. I. M. SWYER.

SIR,—Dr. F. N. Valdez (January 12, p. 106) is evidently unaware of a very simple method of collecting semen apart from the Huhner test. The patient is given a small test-tube and is instructed to collect the semen from the amount which nearly always flows from the vagina after coitus. This method is in conformity with the tenets of the Roman Catholic Church and is satisfactory.—I am, etc.,

Dublin. BETHEL SOLOMONS.

Diagnostic Unit for Practitioners

SIR,—I read with great interest the article by Dr. John H. Hunt (December 29, 1951, p. 1575). I should like to congratulate him on his courage and enthusiasm in developing the unit which he describes at a time when any such project is beset with difficulties at every step. He suggests, however, that small units such as this may have their place within the

National Health Service. So far as my own specialty, radiology, is concerned, I think any such development is to be deprecated. Multiple small units are inevitably costly and result in inferior work. He states that in three years 1,476 patients have been examined radiologically by a whole-time radiographer, although I am not quite clear if this number includes cases sent from other doctors. In larger departments a radiographer is able comfortably to examine 3,000 cases in a year. It has been my experience that in the small cottage hospitals there is frequently a wastage of personnel owing to the necessity of employing a whole-time radiographer who is not fully occupied. It is also my experience that the standard of radiography and the general usefulness of the department to the clinicians using it is seldom as good where a radiologist is only intermittently available as in those departments where a full-time radiologist is available at all times to give his advice and stimulus.

I do not wish to suggest that there are not strong arguments in favour of these larger departments being freely available to general practitioners. Used with a proper understanding of the limitations of radiology and the significance of radiological reports by the practitioner concerned, together with close personal liaison between himself and the radiologist, I think this direct access can be of great benefit to the patient.—I am, etc.,

Ryde. JOHN H. L. CONWAY-HUGHES.

Shortage of X-ray Films

SIR,—Your leading article on this subject (January 12, p. 94) is the first reference to the fundamentals of the problem, the conflict between those who seek to sell film for hard currency and the voracious demands of the "free" Welfare State. Whatever the solution of the wider problem, the trials and frustrations of the present shortage are the despair of those in charge of *x*-ray departments. The standard of work suffers because particular types of film are not available, and shortage of smaller sizes compels the use of larger films than necessary. Shortage of the usual chemicals in the dark-room again spoils good film. Endless time and energy are wasted by everyone in desperate efforts to get some film somehow from somewhere. In the Eastbourne Group we have up to now had an open department to which the general practitioner could refer cases direct—a much-appreciated and, in my experience, seldom-abused facility. Under the present conditions, we have had to withdraw this service indefinitely, except for accidents. You point out many ways in which film can be saved. The fact is that, even when all this is done as far as possible, there still remain endless difficulty and frustration in obtaining sufficient film.—I am, etc.,

Eastbourne. E. OWEN FOX.

SIR.—Your leading article on the shortage of *x*-ray films (January 12, p. 94) is a fair and accurate analysis of the position. Experience has proved that more and more patients are being referred for *x*-ray examination, and with the refinement of the radiological diagnosis and the discovery of new fields of radiological investigation the expansion will continue indefinitely. In view of our economic position, however, we are likely to suffer from a shortage of *x*-ray films for years to come.

The solution of the problem lies perhaps in a radical change of radiographic technique. Our present radiographic method is extremely wasteful. There is no reason why most of the radiographic pictures should not be obtained by photographing on a small plate the screen image, as in mass radiography. A few years before the war I submitted to a leading *x*-ray manufacturing firm a design for an apparatus suitable for that purpose. The screen image is photographed by means of a suitable camera on a film 3¼ in. by 2¼ in. (9 by 6 cm.). The camera can be focused in such a way that the whole of the photographic film is made use of, irrespective of the size of the part of the body examined. Thus the image of a wrist, for example, would be less reduced than, say, the image of a spine. The focusing, however, would be entirely automatic. The photographs could be examined either directly or by means of a magnifying glass or an enlarger.

Not all *x*-ray installations would be powerful enough to produce screen images bright enough for instantaneous photographic exposures, but all stationary parts of the body could be examined with photographic exposures not longer than a few seconds even when only a small *x*-ray apparatus is available. Such a change in radiographic technique is bound to follow in any case as a logical development of the amplified *x*-ray beam, which is on the way and may as well be adopted now.

The saving in *x*-ray films, the cost of which is continually increasing, would be enormous, as the small photographic plates would cost on an average less than a tenth of the cost of full-size films and the outlay on the camera and suitable enlarger would be recovered in a short time.—I am, etc.,

Guernsey. A. ORLEY.

Radiography and Ruin

SIR,—Are *x*-rays "essential"? Surely the answer must be no. Surely this addiction to radiography is just another symptom of the vice of our time, which threatens to bring our civilization to ruin. Thank goodness your leading article on the shortage of *x*-ray films (January 12, p. 94), ending with the words "food for the fit or films for the failing?" indicates that one journal at any rate is aware of the danger. We fret about atomic bombs and the risk of another war, oblivious apparently of the danger that overrides all else—successful treatment at long last come to fruition in a world of men utterly unfitted to receive it. Thus medical science to-day is harnessed to produce dysgenic breeding of humans, destruction of the "lower" animals, impoverishment of the land, pollution of the water, and inordinate world over-population, the precursor of a cataclysmic fall.—I am, etc.,

Buxted, Sussex. W. R. E. HARRISON.

"Idiopathic" Scoliosis

SIR,—It is good to find Mr. Denis Browne (December 29, 1951, p. 1584) lending the weight of his authority to the contention that infantile scoliosis can and should be diagnosed and treated within a few weeks of birth, instead of encountering either unwarranted optimism or equally disastrous pessimism, such as occurs in many clinics.

The diagnosis is certainly not easy, but the existence of a lump on one side of the chest, which is caused by rotation of the spine forcing the angles of the ribs back one side, should always be considered an indication for radiography of the whole spine on a single large film, on which the primary curve and secondary curves of later development can usually be seen and their relative compensation estimated. In the very young infant the original curve can be expected to disappear; once sitting has begun, it may be possible only to ensure that two curves, or a series, balance each other, so that the general axis of the spine is vertical.

As regards splinting: for over 15 years the writer has been using the wooden bed designed by Schede, of Leipzig, which consists of a base of plywood, padded with lamb's wool, covered with "rexine," so as to be washable; from this base project three well-padded struts, one to compress the ribs on the convex side and the other two to exert counter-pressure on the opposite arm and thigh respectively. The child is held up the centre of the bed by padded straps. Traction to the ankle of the concave side can be applied by a bootee tied to an iron loop projecting from the bed. To increase traction the foot of the bed can be raised at night on a box; while by day, as the child develops, it can be given a view of the world for increasing periods by raising the head-end. Every wriggle by the infant represents an exercise in active correction of its deformity. It is not easy to demonstrate details in a photograph, but the writer could lend a small model to any practitioner interested. This type has been constructed in the Bath orthopaedic splint workshop for many years.—I am, etc.,

Edinburgh. M. FORRESTER-BROWN.

Megaloblastic Anaemia in Indians

SIR,—With reference to Professor S. Chaudhuri's experiences with vitamin B_{12} in megaloblastic anaemia in India (October 6, 1951, p. 825), may I be permitted to point out that I have shown in a certain proportion of cases of megaloblastic anaemia in Indian women in Fiji during pregnancy and the puerperium that, apart from a small temporary reticulocytosis with large doses, there is no marrow reversion or haematological response to vitamin B_{12}? On the other hand, there is a good response to folic acid. These results have now been confirmed (*J. trop. Med. Hyg.*, 1951, **54**, 89) by using the vitamin B_{12} preparation known as "normocytin." There is at present no apparent difference between the cases of megaloblastic anaemia associated with pregnancy and the puerperium which respond to vitamin B_{12} and those which do not. As a rule, however, the cases which require folic acid are more severe, and would have proved fatal in the past, a fact which is apparent in the number of deaths registered in Fiji from "anaemia" in Indian women. This becomes apparent from examination of hospital records. Moreover, many of the cases which need folic acid are misdiagnosed, as the clinical picture may resemble typhoid or severe puerperal sepsis owing to the associated high fever. Unless these cases are sought for, the occurrence of megaloblastic anaemia associated with the puerperium and not responding to vitamin B_{12} may be missed, and deaths may be ascribed to some other cause.—I am, etc.,

Suva, Fiji. P. E. C. MANSON-BAHR.

Malaria

SIR,—In spite of Sir Bennett Hance's disarming kindness to my antiquity, I feel I must join issue with him on one or two points in his letter (January 12, p. 104).

Of course, nobody who has studied a section of brain from a case of cerebral malaria would deny that the intravenous route is the first indication for such an emergency. But for the chronic case I suggest that the intravenous route, like the oral, has the disadvantage of resulting in too rapid absorption with proportionally shorter stay in the body, a case analogous to that of penicillin before the invention of absorption-delaying preparations of this remedy. This view is based on the undoubtedly better results which I obtained by intramuscular injection than by the oral route (though I did try very hard to ensure best results by the latter method) and on the fact that symptoms of cinchonism were very rare in my cases; it is subject to correction by experimental evidence on concentration levels of quinine in the blood serum.

I agree that quinine causes necrosis at the site of the injection, but saw no disadvantage in this provided that the injection was made deeply into the gluteal muscles and precautions were taken to prevent regurgitation of the drug along the needle track. I would suggest that the painful nodules which Sir Bennett mentions are a good argument for drilling a good technique of intramuscular injection into the medical subordinates concerned. After all, intramuscular injection is used for the administration of many other drugs besides quinine, and emphasis on good technique would affect the comfort of far more people than those requiring treatment for malaria.—I am, etc.,

London, S.W.1. L. W. HARRISON.

Treatment of Tropical Ulcers

SIR,—Mr. H. D. Obrien writes (December 29, 1951, p. 1544) that the results of treatment of tropical ulcer are still unsatisfactory. He has improved on our therapy by the addition of penicillin and skin-grafting, both of which were unavailable in our series (Marsh, F., and Wilson, H. A., *Trans. roy. soc. Trop. Med. Hyg.*, 1945, **38**, 259). Dr. Obrien writes that his results do not differ much from the best results in the literature surveyed. Actually the method he describes is far from simple and is very time-consuming for a medical officer working with little or no skilled help. Dr. Obrien mentions "zipp," which was devised by J. C. R. Buchanan and W. K. Connell (*Trans. roy. soc. trop. Med. Hyg.*, 1933, **27**, 239) and is still very useful. We found that powdered potassium permanganate applied in a very thin layer over the ulcer under medicated gauze and a light plaster bandage rapidly cleared up the most obstinate cases. The application, dressing, and plaster bandage were removed and fresh material applied at the end of 10 days or a week. The majority of our cases were healed in two weeks by this treatment. Dr. Obrien improved the diet of his patients and kept them in hospital. Our patients were all treated as out-patients and their diet was not improved, much as we would have liked to supplement it. Filth, food, friction, fuso-spirillosis comprise what is known of the aetiology of tropical ulcer, even at the present date. I agree that great numbers of these cases occur still because the "seed" and the "soil" have not decreased, even in this modern world. But more than one effective and simple method of treatment—as Dr. Obrien seems to acknowledge—now exists; so progress has not altogether been smothered.—I am, etc.,

Epping. FRANK MARSH.

Epigastric Hernia and Dyspepsia

SIR,—Many of the coal-miners in my practice have emphysema. A number of them have associated dyspepsia. Their medical cards are filled with such entries as bron. catarrh, bronchitis, 'flu, pneumonia ——, dyspep. gastritis, gastric catarrh, ? peptic ulcer, haematemesis, etc. (Also the chills, myalgia, neurasthenia, debility, anaemia, neurosis, "the pinched look and don't-want-to-go-to-work feelings" which I take to be the forerunners of established silicosis.)

Many of the dyspepsia cases have had hospital investigations and barium-meal radiographs. The chest condition is invariably overlooked and just occasionally a gastric ulcer is reported. They are seldom cured and depend on alkalis for relief. On careful digital palpation of the epigastrium between the ziphisternum and navel in the midline, I find many have unsuspected epigastric herniae. The herniae are often less than the size of a pea, and between attacks are difficult to feel. Once the lump is felt there is usually no doubt. The patients often say, "That's the spot, Doctor," though they may not have been conscious of it before. I attribute this emphysema–epigastric-hernia syndrome to the chest becoming barrel-shaped, with an increase of the circumference of its lower part. The upper recti may be pulled apart at the midline, and a chronic cough, with increased action of the diaphragm, completes the job.

I regret, owing to the protracted rebuilding of the local cottage hospital, that I have been unable to get the majority of these cases confirmed by operation. I feel it may be of interest to record these findings and to suggest that emphysema and epigastric herniae may be the real causes of a great number of cases of ill-defined recurrent dyspepsia and gastric ulcer.—I am, etc.,

Chasetown, near Walsall. ROY HOUGHTON.

Cough Fracture

SIR,—In connexion with the papers on cough fracture by Dr. J. B. Mitchell and Dr. N. Wynn-Williams (December 22, 1951, pp. 1492 and 1494) the following case may be of interest:

The patient, a young man 18 years of age, was first seen on September 19, 1950, with a history of a productive cough of about two weeks' duration, some lassitude, and loss of weight. An attack of pneumonia in childhood was given as previous history. Clinical examination and chest radiograph revealed bronchitic changes in both lower lobes, especially on the right side. The patient was instructed in postural drainage exercises, and advised to return to the chest clinic if his symptoms failed to clear up in a few weeks.

He was not seen again until referred to the clinic by his general practitioner on October 17, 1951. About two weeks previously he had developed some cough and sputum and complained of pain in

his right shoulder and back and down his right arm. His temperature had been elevated, and a pleural rub was heard on the right side at that time. He was given a course of sulphamezathine tablets and put to bed for one week. When seen at the clinic, his general condition was good, and no physical signs could be detected in his chest. A radiograph of his chest (P.A. view), however, revealed a recent fracture of the lower third of his first right rib. It was noted that the first rib on the left was apparently missing, apart from a rudiment discernible on the film. On further questioning, the patient stated that during a fit of coughing some two weeks previously he experienced a sudden fairly severe pain down his right arm which did not leave him for some time. When he was being examined the same kind of pain could still be elicited by pressure on the first right rib. A follow-up radiograph on January 9, 1952, shows good callus formation round the fracture.

It has been stated in one of the papers mentioned above that fractures of the first rib have no relation to cough and are usually asymptomatic. The case described above does not seem to fit in with this. In view of the malformation of the corresponding rib it remains a matter for speculation whether a congenital weakness was present as a predisposing factor in the fracture described.

I wish to thank Dr. John Glen for permission to publish this case, and for his advice and help in connexion with it.

—I am, etc.,

Grimsby. W. E. ZUNDEL.

Post Hoc, Propter Hoc Reasoning

SIR,—I have only just had the opportunity of reading the excellent article by Drs. B. F. Swynnerton and S. C. Truelove (November 24, 1951, p. 1243). That gastric ulcers frequently go malignant is one of the many doubtful theories which have been handed down from textbook to textbook without due inquiry, to clog the minds of generations of unfortunate students. *Post hoc, propter hoc* reasoning has been the curse of scientific progress down the ages. Because we bear certain superficial resemblances to the ape it must be assumed that we have descended from him. Because a carcinoma develops at the site of an ulcer it must be assumed that the two are dependent one upon the other. Because fibro-adenosis of the breast, at a certain stage, is closely allied histologically to carcinoma, it must be called a precancerous condition, and the breast is amputated, while there is no shred of clinical evidence that carcinoma develops any more frequently in these than it does in the normal breast.

There is only one way of forming criteria of malignancy, and that is by studying the living patient, and the pathologist who takes the trouble to follow up his patients instead of going through the years with his eye glued to the microscope or the pathological specimen is the one from whom real advances are to be expected. The great achievements of the old pathologists came from just those men who combined a study of pathology with a study of clinical medicine, and one greatly deplores the present tendency to turn out so-called specialist pathologists who have neither knowledge nor experience of clinical medicine. This present tendency towards the narrow training of specialists will be the ruination of British medicine unless nipped in the bud. We have always prided ourselves on our balance and common sense, and if we are unable to "walk with kings—nor lose the common touch," then it is the kings to whom we should say farewell.—I am, etc.,

Nairobi. R. T. BURKITT.

Simultaneous Haemorrhage and Perforation of Meckel's Diverticulum

SIR,—The article by Drs. John N. Walton and Norma D. Lill (January 12, p. 88) prompts me to report the following case where severe bleeding was associated with a perforated peptic ulcer of Meckel's diverticulum.

A boy, aged 8 years, was admitted on May 9 with a diagnosis of acute appendicitis. There was a history of diarrhoea for four days. On the day previous to admission he had developed lower abdominal pain, but had not vomited. No other relevant history could be obtained. When examined the child was crying quietly. The temperature was 100° F. (37.8° C.) and pulse 84. There was generalized abdominal tenderness and rigidity, most marked in the right iliac fossa. Occasional bowel sounds were heard on auscultation. There was marked tenderness in the recto-vesical pouch on rectal examination.

Operation.—When the abdomen was opened through a McBurney incision a considerable amount of blood-stained fluid was present in the peritoneal cavity. The appendix was normal. A Meckel's diverticulum, situated about 12 in. (30 cm.) from the ileo-caecal valve, showed a circular perforation nearer the base, exuding intestinal contents. A small artery passing from the mesentery to the diverticulum was bleeding freely in the mesenteric edge of the perforation. The bleeding was controlled by ligation of the vessel in the mesentery and the diverticulum was excised. The patient had an uneventful convalescence and was discharged on May 30.

Specimen.—Examination showed the presence of gastric mucosa in the distal half. The remaining mucosa was of the small intestine type. The perforation was situated on the intestinal area about 1 cm. from the edge of the gastric mucosa.

The main points of interest in this case are the unusual association of haemorrhage and perforation, the absence of evidence of passage of blood in the stools (because of involvement of the remnant of the vitello-intestinal artery, haemorrhage had occurred into the peritoneal cavity and not into the lumen of the gut), and the site of the perforation.—I am, etc.,

Balham, S.W.12. J. BURKE.

Congenital Dermal Sinus and Meningitis

SIR,—Drs. B. S. Cardell and Bernard Laurance have done service in reporting (December 29, 1951, p. 1558) their interesting case of congenital dermal sinus associated with fatal meningitis, since, although a rare condition, it will be met with in paediatric practice from time to time and if recognized early can be saved. They refer to two cases of my own which I included when reporting eight cases of spinal epidural abscess in 1938. In one there was an epithelized track from the skin to the dura; in the other, a similar track led down to an infected intra-spinal epidermoid cyst; and, in both, the superficial end was represented by no more than a minute punctum. Since that time I have met with two more cases of intra-spinal dermoid or epidermoid cyst (one of each) connected to the overlying skin by an epithelized track, the arch of the corresponding vertebra being deformed or bifid in each case.

One of my objects in writing this note is to issue a warning against regarding the removal of one of these innocent-looking sinuses as necessarily a simple operation. In fact the surgeon may find himself among the components of the cauda equina, and unless familiar with neurosurgical techniques he may precipitate the very complication he was hoping to prevent. Of the 35 cases quoted in their paper no less than 17 had dermoid or epidermoid cysts lying within the spinal canal.

It seems to me that the origin of all these sinuses is not necessarily always the same. Those overlying the sacro-coccygeal region may well be modified forms of pilonidal sinus, as Walker and Bucy suggest, the neural crest ectoderm and cutaneous epithelial ectoderm never having completely separated. The opening is very small, admitting no more than a bristle, and can easily be overlooked by even the most observant mother. But some of the more highly placed sinuses must surely be forms of spina bifida. Of the 33 sinuses overlying the spinal column quoted by the authors 19 were associated with bony defects in the vertebral arches of about the corresponding level, and seven more said to have no bony defect were, nevertheless, connected with the meninges. Some were accompanied by a tuft of hair, an area of pigmentation, or a capillary angioma; and seven had abnormalities of the cord or filum terminale. All these features would fit in with spina bifida occulta, but with a sinus in addition.

In the lesion under discussion infection of the sinus leads inevitably to infection within the spinal canal, which, depending on the deep connexions of the track, leads either to a

primary spinal meningitis or, as the result of infection of the spinal epidural fat or of an intra-spinal cyst, to secondary meningeal irritation or frank meningitis. From the experience of my own 10 cases of spinal epidural abscess, together with others I have seen with colleagues, I would suggest that the really important lesson to be learned is that where a child, ill, feverish, and fretful, complains of pain in the back, or is observed to use it awkwardly—not bending it when picking up something off the floor—and on examination resents even the slightest passive flexion yet not of hyperextension—thus differentiating the case from tuberculous disease of the spine, which it may closely mimic. Think of the possibility of ascending spinal meningitis and look for the minute opening of such a sinus. The sinus may be actively inflamed, as in the case of Drs. Cardell and Laurance, but there may be no inflammatory reaction whatever: the symptoms may be gradual, fulminating, or intermittent, and the latter, like the case reported, may finish with a fulminating attack, the anxiety then being vascular thrombosis affecting the cord. If an *x*-ray picture shows a bifid or ill-formed spine the sinus is even more certainly the responsible lesion. The spine tends to become more and more extended, and head retraction develops, yet a little extra passive extension is tolerated—but not a degree of flexion. This "unfolding" of the spine is very characteristic of ascending spinal meningitis. It is wiser not to perform a lumbar puncture, since the needle may transfix an epidural abscess and carry pus into the subarachnoid space, but a cistern puncture will give information regarding cells and organisms. Should the case be seen before pus has formed sulphonamides and antibiotics may abort the condition, but where pus is suspected or the case is not responding to conservative treatment operation is clearly called for, and it will almost certainly mean a laminectomy.—I am, etc.,

Birmingham. F. A. R. STAMMERS.

The Common Cold

SIR,—Treatment for this malady is being increasingly solicited by the public, who previously were content to endure this affliction stoically or utilize one of the remedies prescribed by folklore. I believe that it has been established that this infection is due to a virus of small molecular size. As the natural immunity conferred by an attack is of short duration vaccine treatment is presumably foredoomed to failure. Virus infections seem resistant to our present range of medicines except for some of the larger molecular viruses which are sensitive to an odd one of the latest antibiotics. If one of these is found which is effective against the coryza virus it is probable that its expense will make its use economically impracticable for at least several years.

I would therefore venture to suggest that the money at present being spent on research on the common cold would have been better devoted to research on the nature of viruses. Any treatment apart from general constitutional measures which can be utilized at present is at the best palliative and, I fear, too often actively harmful. It seems as meddlesome to use ephedrine or other vasoconstrictors in what is an acute inflammatory state as it would be to use ice packs in the treatment of a boil. I think the use of these applications often contributes to the incidence of sinusitis, especially in the mucopurulent stage where a blocked ostium is opened after a negative pressure has become established or there is a pabulum of inflammatory exudate present in the sinuses. It is in this stage these remedies are supposed to be especially efficacious.

The widespread opinion that colds are best left to take their course concurs with this view. A folklore remedy which seems more helpful is that of sniffing a salt solution. This seems analogous to using salts in acute dysentery, which was what I believe to be the best treatment available prior to the introduction of the sulphonamide drugs. In folk-medicine the essential oils in the form of a vapour—for example, eucalyptus, linseed, hops, and onions—figure frequently in anti-coryza measures. It would be interesting to know if any essential oils can indeed influence the course of the coryza infection in any way and, if they do, what their action might be. Might they act by inducing hyperaemia?

In my own case, when sufficiently afflicted to desert stoicism I think I find some relief from hypertonic saline irrigations and also am almost persuaded that the duration of the mucopurulent stage is reduced.—I am, etc.,

Kirkham, Lancs. J. SUTHERLAND.

Indian Remedies for Poor Memory

SIR,—I have never used or wished to suggest (*British Medical Journal*, October 6, 1951, p. 852) the use of the African drug *Catha edulis* therapeutically, and least of all for impaired memory, as Dr. D. A. Baird (December 22, 1951, p. 1522) alleges. I referred to it because its chemistry and pharmacology, as indicated in my references to the *Dispensatory* of the United States of America, may throw some light on the scientific investigation of the Indian drug *Celastrus panniculata* Willd.; both these drugs are derived from the same botanical family and have one of the alkaloids, celastrine, in common. Such botanical grouping often gives some suggestion of similarities (though not identity) in chemical and pharmacological properties, as those of *Atropa belladonna* L., *Hyoscyamus niger* L., and *Datura stramonium* L., all plants from the same botanical family—Solanaceae.

My mention of *Catha edulis* as an excellent stimulant beverage, without subsequent depression (in therapeutic doses), was based on Watt and Breyer-Brandwijk's references and particularly on Martindale's *Extra Pharmacopoeia* (1914, 1, 325), where catha is mentioned as a drug known for generations for its sustaining power, and the therapeutic (pre-narcotic) doses for its solid and liquid extracts are given. All beverages, including the caffeine-containing tea and coffee, can be harmful in overdoses or during prolonged misuse. Amphetamine, which is a cortical stimulant, can produce addiction and other toxic effects and yet is a very valuable drug in narcolepsy and depressive states. The development of the scientific use of opium and some of its valuable alkaloids and the synthesis of amidone ("physeptone") and pethidine ("demerol") would have been impossible if the dangers of addiction or deleterious effects during *mis*use had stifled all research. The Indian drugs I mentioned have been very extensively and effectively used from the times of Charaka and Súsruta, and are not known to produce any deleterious effects, and I trust that their scientific investigation will confirm the Indian and my own records.—I am, etc.,

Oxford. SOHRAB A. E. HAKIM.

SIR,—I have been in communication with Dr. Hakim, and have suggested that a controlled clinical trial of *Celastrus panniculata* could be carried out here. Dr. Hakim has agreed to such a trial and I hope to be in a position to report our findings in the not too distant future.—I am, etc.,

Little Plumstead Hall, Norfolk. J. V. MORRIS, Medical Superintendent.

Danger of Extracting Many Teeth at Once

SIR,—I am more than pleased to see that Dr. I. E. Reichenfeld (December 8, p. 1406) is converted to my view that nutrition, environment, and education are the key points in any campaign for better dental health. The good doctor must realize that the dental surgeon sees his patient generally for the first time when the mouth is already in a chaotic state and nothing short of extraction is of any use whatever. I have many, many, tragic mouths to deal with in patients of ages from 12 to 16 upwards, and with all the knowledge and skill in the world one can do nothing with a mouth full of roots and multiple abscesses.

I will agree that Continental people are more conservative-minded, but I, in common with my colleagues, have had the melancholy duty of removing foul septic crowns and bridges from Polish, Italian, and other Continental patients. From

my own experience the conservation there is pursued to impossible and very dangerous limits. I have at the moment an Austrian gentleman who wishes me to construct a bridge upon a floating $\overline{7}$ across to a non-vital and rarified $\overline{4}$. A bridge is already carried on rather similar teeth on the right side.

There is no doubt that, given greater co-operation between medical and dental colleagues, much can be done, but I must restate this: although I know that medicine is already overburdened, the family doctor always sees the patient first and usually many years before the dentist.—I am, etc.,

Birmingham. L. A. PHILPOTT.

POINTS FROM LETTERS

L-*Nor*adrenaline

Mr. L. M. SPALTON (Bayer Products, Ltd.) writes: The statement in your annotation, entitled "*Nor*adrenaline by Intravenous Infusion" (December 29, 1951, p. 1571), that the solution of *nor*adrenaline in saline should be slightly acid, or should contain ascorbic acid, may well impose an unnecessary burden on the anaesthetist. Normal saline, if properly prepared, should always be slightly acid, and will be alkaline only if stored for a prolonged period in glass containers which release alkali. L-*nor*-adrenaline as manufactured usually contains an antioxidant in the ampoule, and will retain its potency for at least a year or two. If the contents of the ampoule are added to a saline solution which has become alkaline, oxidation will occur, but not for several hours.

Shortage of X-ray Films

Dr. JAMES F. BRAILSFORD (Birmingham) writes: Because we are short of *x*-ray films essential radiographic services are being jeopardized, but the reason why we are short of these essentials is because they are being extravagantly wasted, chiefly by those clinicians who fail to give adequate consideration to the need of the radiographic examination and to assess the true value of the evidence to the patient which this expensive service yields. If a careful census of films used were made and their merits assessed it would be found that the percentage wastage was in the region of over 70 and often over 90, and the tuberculosis and chest service would easily top the list in waste. For over 10 years I have been repeatedly urging in and out of the medical journals the need for the exercise of reasonable care in the use of *x*-ray films. I forecast the present outcome before the wastefulness of the present service; it may have come sooner but for this cry in the wilderness. I saw the same waste in the U.S.A., and even against opposition did not miss any opportunity of drawing attention to it.

Ruptured Spleen

Dr. J. MURRAY BLACK (Dunfermline, Fife) writes: Recent articles in the *British Medical Journal* by Sir James Learmonth (July 14, 1951, p. 67) and Mr. Harold Edwards on splenectomy stimulated me to look up the records in the Dunfermline and West Fife Hospital regarding the incidence of traumatic rupture of the spleen. I find that during the year ended November, 1951, five cases were operated on. Considering that A. K. Hendry (in *British Surgical Practice*, vol. 8) gives the London Hospital figures as 32 cases in 34 years, the occurrence of five cases in one year at a small provincial hospital must be unusual.

Initiative

Dr. P. C. LEWIS (Hove) writes: I was called out one evening to see a little boy, and on arrival found that he was suffering from sore throat and earache. The auditory canal was full of wax and the drum head thus obscured. I had not brought my ear syringe with me, and it was essential to remove the wax. As no syringe was available it occurred to me that the little boy might have a water pistol. Discovering that one was in the house (confiscated for obvious reasons), it was brought forward and one shot displaced the wax to reveal a red but not bulging drum.

Correction

Dr. S. RUSSELL JAMIESON writes that he omitted to thank Mr. Peter Gaskill, of the Department of Education of the Deaf at Manchester University, for information contained in paragraphs two to five of the discussion in his paper on "Tuberculous Meningitis" (*Journal*, January 12, p. 84).

Obituary

NIGEL CORBET FLETCHER, O.B.E., M.B.

Dr. N. Corbet Fletcher, formerly Surgeon-in-Chief of the St. John Ambulance Brigade, died in London on December 21, aged 74 years.

The son of the late Dr. J. Corbet Fletcher, Nigel Corbet Fletcher was educated at Merchant Taylors' School; Queen's College, Cambridge, to which he won a classical scholarship; and University College Hospital. Qualifying in 1904, he graduated in the following year. He won the Fellowes Gold Medal at University College Hospital, where he held resident posts as house-physician and senior obstetric assistant. In 1906 he started practice in Hampstead, where he worked to within a few days of his death. His reputation grew quickly and he was soon respected and admired throughout the whole district. Fletcher was a fine athlete, and played Rugby football for his school, his university, and for Middlesex. He was twice capped for England, in 1901 and 1903. In 1908 he married Mabel Isabel Browne. His married life was ideally happy, and it was a great blow to him when his wife died in 1942.

Major A. C. White Knox, Surgeon-in-Chief of the St. John Ambulance Brigade, writes: Corbet Fletcher's great hobby was the St. John movement, and he gave his first lecture for the association in 1908 to a class of employees of the old L.N.W. Railway. He was associated with the late Sir James Cantlie in teaching first aid at the Regent Street Polytechnic and the College of Ambulance. In 1915 he took over the answering of queries in the magazine *First Aid*, and 13 years later became the honorary medical correspondent to the Order's own magazine. His concise and sometimes pungent remarks in these magazines made readers look forward with interest to next issues. He lectured and examined many classes in first aid and home nursing for the railways, police, and many other large organizations where a knowledge of first aid was becoming essential. In 1916 Corbet Fletcher became divisional surgeon to the Hampstead Division of the No. 1 (Prince of Wales's) District. He was promoted to Assistant Commissioner and later to Surgeon-in-Chief, a post which he held from 1936 to 1950. He wrote numerous books on first-aid work, and was awarded the O.B.E. for his services to the movement. He held the Service Medal, and between 1918 and 1937 was made Honorary Associate, Officer, Commander, and finally Knight of the Order of St. John.

In the 25 years that I knew Nigel Corbet Fletcher, or "N. C. F.," by which initials he was known throughout the whole St. John world, I would say that his outstanding qualities were a lovable nature, hidden sometimes under a gruff exterior, and a great courage which carried him forward under the difficulties of failing health. His name is a landmark in the first-aid world, and his work will stand for many years to come as a great example of the St. John motto, *Pro Fide—Pro Utilitate Hominum*, "For the Faith and For the Service of Mankind."

R. FOSTER KENNEDY, M.D., F.R.S.Ed.

Dr. Robert Foster Kennedy's death on January 7 was recorded in last week's *Journal* (p. 165).

Dr. Robert Marshall writes: The first determining point in Foster Kennedy's career was when he was appointed house-physician at the National Hospital in

Queen Square, at a period when it was rare for graduates of the provincial universities to obtain even a resident appointment in London. The second was when he embarked for America to establish there the principles and precepts of British neurology which he had learnt so thoroughly. He was a man of dynamic energy and found time in his full life for many and varied activities. After his death the *New York Times* paid tribute to him in these words:

"One of the leading medical personalities of the United States and the world for many years, Dr. Kennedy was more than an outstanding physician or neurologist. He was a scholar and a wit, connoisseur and philosopher, an accomplished orator and raconteur. The mere announcement that Foster Kennedy was to deliver an address or participate in a discussion was sufficient to assure a lecture hall overcrowded by fellow-physicians, whom he never failed to delight with his original point of view, his fresh approach to a problem, his *bons mots* and aphorisms, pronounced in a faint Irish brogue. The medical fraternity came to regard him as a modern version of a Delphic oracle who always could be counted upon to highlight the essence of a subject with a trenchant quotable phrase."

This just and kindly appreciation of him gives the reader some idea of his amazing charm and of what a delightful person he was, but to see Foster Kennedy at his best was to see him at the bedside of a sick person. There he was a simple, kind, and gentle man, quick to appreciate the patient's point of view, and leaving nothing undone for his comfort and his welfare. If, as has been said, one can achieve success by being clever or by being kind—and one can always be kind—his skill and his cleverness were transcended by his unfailing kindness. When he was elected a doctor of science, *honoris causa*, of the Queen's University of Belfast, the dean of the faculty reminded us that he had served in the first world war with the rank of a British major in a French military hospital, and was awarded the Military Cross. He had also obtained special recognition by learned societies in France, Sweden, Hungary, Cuba, and Mexico, as well as London and Edinburgh. Better still, he had made friends all over the world, and nothing delighted him more than to entertain them royally in his beautiful American home. Ulster can indeed be proud of Robert Foster Kennedy.

The sudden death of Dr. W. J. McL. BAIRD, of Blackpool, on October 29 at the age of 69, came as a great shock to his many friends and colleagues. He had made what was apparently an excellent recovery from two serious operations the previous year, and all his friends felt that his wonderful vitality would carry him through many years to come. William Joseph McLearn Baird studied medicine at Queen's University, Belfast, and at Dublin, graduating M.B., B.Ch. in 1904. He went into general practice in Blackpool, where he was the last of the general-practitioner surgeons in the area. He had been on the staff of the Victoria Hospital from 1910 to 1948, when he retired from the active surgical staff to become honorary consulting surgeon. In the 1914–18 war he served in Mesopotamia, and was attached to the 32nd British General Hospital. On returning from the Middle East, in addition to running a large general practice, he resumed his surgical work at the Victoria Hospital, and also had charge of one of the auxiliary military hospitals established in the town. As honorary secretary of the Blackpool Division of the B.M.A. from 1912 to 1923 he took an active part in local medical politics in the early days of National Health Insurance. He later held office as chairman of the Division, and was a member of the insurance committee and panel committee. At the time of his death he was a member of the Blackpool executive council and the local medical committee. He was a J.P., president of the local Ulster Association, and had been a member of the borough council for a number of years. He leaves a widow, to whom every sympathy is extended.

A colleague writes: "Mac," as he was known to his friends, will be much missed. He was a very good companion, and to travel with him was a most enjoyable experience. His likeable personality always asserted itself in the end, even on occasions where controversy and somewhat acrimonious argument had been prevalent. A true son of Ulster, like so many of his fellow countrymen he loved to be "agin the Government" at times, and thoroughly enjoyed a spot of bother.

Lieutenant-Colonel EDWARD VICTOR HUGO, formerly of the Indian Medical Service, died on December 24, 1951, after a short illness at his home in Richmond, Surrey. Born in 1865, he was educated at Foyle's College, Londonderry, and received his medical training at St. Bartholomew's Hospital, qualifying in 1889 and graduating M.B., B.S. (with honours and gold medal) in 1890. His postgraduate studies gained him many distinctions which served him well in his future career in the I.M.S. He joined the Service in 1892, and in the 30 years of his life he devoted to it there were ample opportunities for the development of his personal and professional abilities to the fullest degree. He was a member of the Waziristan expedition, the Chitral relief force, and the Malakand field force, and he took part in the siege of Chakdara. He was mentioned in dispatches for his work on the N.W. Frontier in 1897–8. His special interest was surgery, and in 1908 he was elected professor of surgery at King Edward's Medical College, Lahore, a post which he held until 1914, when he reverted to military duties. As senior medical officer in the hospital ship *Gascon* he was present at the Dardanelles landing. In 1916 he became consulting surgeon, Mesopotamian Expeditionary Force. He was appointed C.M.G. in 1917, having previously been mentioned in dispatches. After the war he returned to the chair of surgery in Lahore, where he remained until he retired in 1922 and came to live in Richmond. After leaving India he served for several years as a member of the medical board of the India Office, and he took an active interest in the work of the B.M.A., becoming chairman of the Richmond Division and president of the Surrey Branch in 1934–5, besides finding time to support the local Red Cross, the Royal Hospital, Richmond, and the Royal National Lifeboat Institution, which last year bestowed on him its highest award, the gold medal. Colonel Hugo married in 1909, and his widow survives him.—L. H. W.

Dr. PERCY CLIFT PEACE died at his home at Burry Port, Carmarthenshire, on January 1, aged 71. Born at Sheffield, he studied medicine at University College, Sheffield, qualifying in 1903. After serving as senior house-physician at the Sheffield Royal Hospital and resident medical officer at the North Evington Infirmary, Leicester, he went to Wales in 1908 and entered practice in Tylorstown, Glamorganshire, in the mining district of the Rhondda Valley. He continued his general practice in that town for 16 years, and gained a high reputation among his colleagues and his patients for his work. He took an interest in the work of the British Red Cross Society and in the St. John Ambulance Brigade, lecturing and examining for both bodies. In 1924 he went into practice in Kidwelly, Burry Port, and district and carried on his life work among the people of Wales for a further 27 years. He lived in Kidwelly until 1947, when he continued his practice from the neighbouring town of Burry Port, leaving his partner in charge at Kidwelly. It was in Kidwelly that his work with the British Red Cross

Society and the St. John Ambulance Brigade came to fruition, for he was appointed honorary life member and examiner for both. He took a lively interest in local affairs, and was a borough councillor from 1945 to 1947, when ill-health forced him to retire. Although crippled at an early age, he was able to take part in and was ever interested in sports, holding vice-presidencies of Kidwelly and Burry Port rugby football clubs and the Burry Port bowling club.

T. R. D. writes: As a general practitioner Dr. Peace was a very sound clinician and always put his patients' welfare in the foreground. His outstanding personal quality was courage, which sustained him through many difficult times and in the fight against increasing physical infirmity during the last 10 years. Though the struggle was prolonged and often grim, he maintained to the end his confident and cheerful bearing towards his patients. At home he was the wise and understanding father of a united family, always ready to take a kindly interest in their troubles and rejoice with them in their pleasures. He is survived by three sons of his first marriage and by his widow and a young son and daughter.

Dr. PERCY BERNARD SKEELS, coroner for the Metropolitan District of Essex, who died suddenly on January 5 at the age of 70, was educated at the Leys School, Cambridge, and was admitted as a solicitor in 1905. While still in legal practice he entered Guy's Hospital Medical School in 1917, and qualified medically in 1925. He was later deputy coroner to Dr. Guthrie in the County of London and also for the City of London, and in 1933 was appointed to the coronership, which he still held at the time of his death. In 1943 he was elected president of the Coroners Society, of which he was an active member, and he was also a member of the Medico-Legal Society and on the council of the Medical Protection Society. Skeels represented a rather unusual type of career, the solicitor who takes up medicine, and throughout his years of office as coroner he constantly showed his legal training in the scrupulous attention to detail which he maintained in the conduct of his court and which he infused into the pathologists who worked for him. At the same time his interest in medicine never flagged, and when an unusual case was reported to him he would often visit the Royal Society of Medicine to seek further information. Although he did not write much himself he was always willing to advise on medico-legal publications. His interests were wide. In his young days he played cricket for Guy's Hospital, and he was a keen ornithologist and horticulturist.—F. E. C.

The passing of Dr. JOHN PHILLIPS has taken from the ranks of the medical profession another of those ardent souls whose ambition it is to die in harness rather than to retire. Dr. Phillips was well past 80 before his last illness intervened to stop his working. He was born in 1866, the only son of Mr. and Mrs. William Laing Phillips, of Harrogate, and entered Edinburgh University as a medical student, graduating as M.B., C.M. in 1888. After being resident medical officer at Mount Vernon Hospital, Hampstead, and house-surgeon at Monkwearmouth and Southwick Hospital, he settled in practice in Southsea in 1894. In 1901 he was top of the poll for election as assistant physician on the reconstituted staff of the Royal Portsmouth Hospital, from which as senior physician he retired in 1921. Dr. Phillips joined the Territorials in 1908 and was a major in the R.A.M.C. when called up for home service in 1914. He was appointed to the Staff of the 5th Southern General Hospital, which was established at Portsmouth during the first world war, and in 1918 he was made cardiologist to the Ministry of Pensions for the Portsmouth area. His last illness, of 18 months' duration, was most bravely borne. In 1914 Dr. Phillips married Dorothy Mary, the daughter of the late Mr. and Mrs. Forbes-Leith, of Southsea. Much sympathy is extended to his widow.—M. A. K.

Medico-Legal

FORGOTTEN TOURNIQUET

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

On March 14, 1951, a bus conductor, aged 32, was admitted to Heatherwood Orthopaedic Hospital, Ascot, for an operation for the removal of a cartilage in his right knee. Apart from his knee injury he was in perfect health. He was brought into the theatre at 12.15 p.m. on March 16. The tourniquet, an Esmarch rubber bandage, had already been applied to his thigh by the anaesthetist. The surgeon, assisted by a registrar, then performed the operation, which lasted about 30 minutes. It was the last operation performed by the surgeon that morning. The anaesthetist left the theatre with the surgeon's consent before the end of the operation. The surgeon saw the patient taken from the theatre. Nobody removed the tourniquet. It was hidden by the theatre gown he was wearing and by towels.

When the patient recovered from the anaesthetic at about 1.15 p.m. he complained of pain in his leg, and the registrar saw him in the ward. He was given an injection of morphine but was very restless, having to be held in bed until after a second injection of morphine at about 3.30 p.m. It was not until 6.15 p.m., when a male nurse was straightening up the patient's bed, that the tourniquet was noticed. The nurse released it at once.

The patient was seen that evening by the surgeon, who found deep lines round his thigh and red areas where the tourniquet had been. Treatment was immediately instituted, and next day the patient was given a blood transfusion. He later began to vomit, and it was found that his kidneys were not functioning properly. Some sensation later returned in his right leg and he could move his toes, but as his kidneys still did not function properly he was transferred to Taplow Hospital to be under the care of a doctor who had special experience of such injuries. He got worse, however, and a week after transfer developed abdominal pain. An exploratory operation was performed on March 30, but no cause could be found, and he died on April 4, nineteen days after the injury.

At the inquest the pathologist who carried out the necropsy gave evidence that the organs of the circulatory system were pale, there was congestion of the vessels, and the heart muscle was flabby. Death was caused by pulmonary oedema, and the serous spaces contained an increase in fluid. The kidneys showed degenerative changes associated with damage to the muscles of the right leg following the prolonged application of the tourniquet, which had caused a band of necrosis in the muscle of the upper part of the right thigh with progressively less severe changes from there towards the knee. Other muscles in the body showed spontaneous bruising. The failure of the kidneys to function normally had produced a very great rise of urea in the blood.

The cause of death was recorded as uraemia and nephrosis (crush syndrome). A verdict of death by misadventure was returned.

Universities and Colleges

UNIVERSITY OF BRITISH COLUMBIA

Dr. Donald Hugh Paterson has been appointed Clinical Professor of Paediatrics in the Faculty of Medicine of the University. Professor Paterson graduated M.B., Ch.B.Ed. in 1916. He proceeded M.D. in 1928 and was elected an F.R.C.P. in the following year. Before returning to Canada in 1947 he was Consulting Paediatrician to Westminster Hospital, Consulting Physician to the Hospital for Sick Children, Great Ormond Street, London, and Lecturer in Diseases of Children in the University of London. He is Paediatrician in charge of the Children's Health Centre at Vancouver General Hospital and Consultant in Children's Health to the Metropolitan Health Committee of the City of Vancouver. He was elected F.R.C.P.(C.) in 1947.

INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **January 5** (No. 1) and corresponding week 1951.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the 160 great towns in England and Wales (126 in 1951), London administrative county, the 17 principal towns in Scotland (16 in 1951), the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES in Countries and London	1952					1951				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria	45	6	9	1	0	38	5	11	4	6
Dysentery	295	30	43	4	1	834	74	98	3	
Encephalitis, acute	3	1	0	0		4	2	0	0	
Enteric fever:										
Typhoid	2	1	0	0	1	4	2	1	0	3
Paratyphoid	6	1	2 (B)	0		1	0	1 (B)	0	
Food-poisoning	309	23		0		108	33		0	
Infective enteritis or diarrhoea under 2 years				14	19				8	12
Measles*	3,491	46	135	174	77	21,688	2753	75	65	130
Meningococcal infection	40	3	15	2	3	50	4	26	2	2
Ophthalmia neonatorum	24	0	10	0		26	0	13	0	
Pneumonia†	973	86	231	5	1	1,774	109	459	20	
Poliomyelitis, acute:										
Paralytic	18	2	0	0	2	37	4	2	0	3
Non-paralytic	7	0				10	0			
Puerperal fever§	197	28	4	2		90	6	12	1	1
Scarlet fever	1,102	84	229	29	39	923	59	174	36	82
Tuberculosis:										
Respiratory			68	13				94	30	
Non-respiratory			10	4				15	9	
Whooping-cough	2,154	74	182	94	66	5,009	521	442	25	64

DEATHS in Great Towns‡	1952					1951				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria	0	0		0	0	*2*	0	*0*	0	0
Dysentery	10	0		0			1		0	
Encephalitis, acute		0			0		0			1
Enteric fever	0	0		0		*0*	0	*0*	0	
Infective enteritis or diarrhoea under 2 years	20		2	0	0	*19*		*2*	2	2
Influenza	23	4		0	0	*458*	40	*17*	8	1
Measles		0		0	0		2	*0*	0	1
Meningococcal infection		0					0	2		
Pneumonia	305	51		11	10	*770*	111		31	16
Poliomyelitis, acute	0	0			0	*3*	0			0
Scarlet fever		0		0	0		0	*0*	0	0
Tuberculosis:										
Respiratory	172	18	22	3	5	*245*	37	*38*	9	15
Non-respiratory		3	4	0	1		1	*5*	1	3
Whooping-cough	2	0		0	0	*12*	1	*1*	0	3
Deaths 0–1 year	299	26	53	5	15	*334*	51	*51*	16	17
Deaths (excluding stillbirths)	6,183	909	677	129	193	*9,860*	1570	*1053*	256	284
LIVE BIRTHS	8,054	1287	874	265	452	*6,858*	1217	*903*	231	320
STILLBIRTHS	183	25	26			*173*	20	*17*		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.
‡ See "Census Changes" opposite.

Vital Statistics

Census Changes

Population figures obtained at the 1951 census show that there are now 160 great towns (population over 50,000) in England and Wales instead of 126, and 17 principal towns (population over 30,000) in Scotland instead of 16. Therefore the 1952 figures for deaths, births, and stillbirths in these countries, published weekly in our Table, cannot be accurately compared with those for 1951, which are printed in italics. The 160 great towns in England and Wales have a population about 10% higher than the 126.

Uncorrected Notifications

The weekly figures of notifications recorded in the Table and depicted in the graphs on these pages are uncorrected figures and may sometimes differ considerably from the final corrected ones. A case in point is diphtheria, on which we commented last week (January 19, p. 169), the corrected figures for which may be appreciably different from those we discussed.

Quarterly Return for Eire

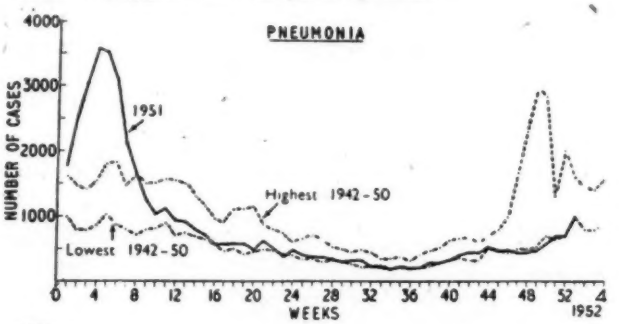
In the third quarter of 1951 the infant mortality rate in Eire was 36, as compared with 37 for the third quarter of the previous year. The death rate per 1,000 from tuberculosis, with the corresponding figure for 1950 in parentheses, was as follows: all forms, 0.6 (0.7); respiratory system, 0.4 (0.5); all other forms, 0.2 (0.2). The number of deaths from influenza was 59, as compared with 30 in the third quarter of 1950.

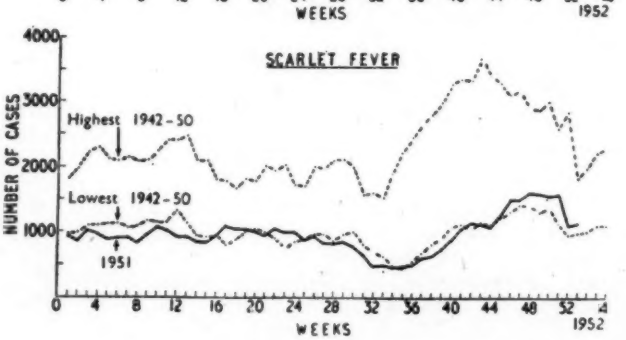
Week Ending January 12

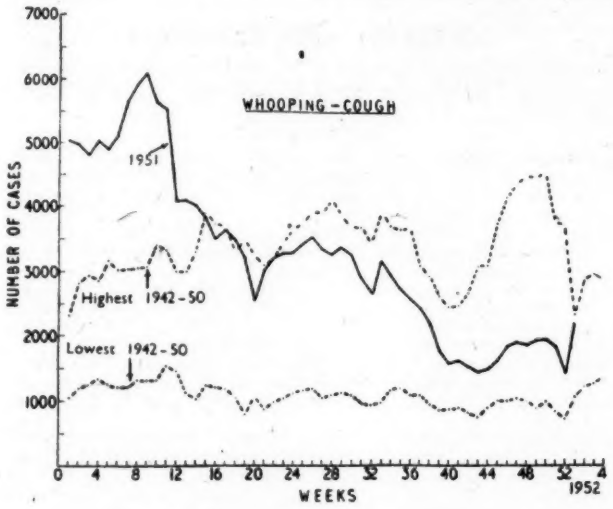
The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,055, whooping-cough 2,394, diphtheria 33, measles 2,840, acute pneumonia 1,056, acute poliomyelitis 36, dysentery 315, paratyphoid fever 3, and typhoid fever 3.

Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported during the nine years 1942–50 are shown thus - - - - - - -, the figures for 1951 and 1952 thus ————. Except for the curves showing notifications in 1951 and 1952, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.







Infectious Diseases

A general rise occurred in the notifications of infectious diseases in England and Wales during the week ending January 5. The largest increases were measles 1,160, whooping-cough 752, and acute pneumonia 295.

The notifications of scarlet fever were 7 more than in the preceding week; the largest local fluctuation was a decrease of 34 in Lancashire. The largest rises in the number of notifications of whooping-cough were Yorkshire West Riding 113, Warwickshire 93, and Staffordshire 69. The increased incidence in these counties was due to the experience of the county boroughs. The notifications of diphtheria were 2 more than in the preceding week. The chief features of the returns of diphtheria were decreases in Lancashire 9 and Lincolnshire 5. A rise in the incidence of measles was recorded throughout the country, although only 13 cases were notified in the five south-western counties and the incidence in London and the south-midland counties was relatively low. The largest rises in the notifications of measles were Lancashire 191, Warwickshire 152, Staffordshire 126, and Kent 90. The rise in acute pneumonia was general throughout the country; the largest increase was London 56.

The notifications of acute poliomyelitis increased by 1 for paralytic and by 4 for non-paralytic cases. The largest returns were Kent 4 and Lancashire 3.

A further 38 cases were notified from the outbreak of dysentery in Norfolk, Norwich C.B. The other large returns of dysentery were Middlesex 34, Lancashire 34, London 30, Devonshire 19, Yorkshire West Riding 14, and Northumberland 13.

The largest centre of food-poisoning during the week was Northamptonshire 119 (Towcester R.D. 39, Northampton C.B. 36, Brixworth R.D. 25).

Medical News

French Scholarships in Medical Science.—Under the terms of a reciprocal arrangement with the Centre National de la Recherche Scientifique, the Medical Research Council invites applications from British workers in medical science, excluding clinical medicine, for two scholarships tenable at research institutions in France during the academic year 1952–3. The scheme is intended for young graduates in medicine or science who have already had some experience in a branch of medical science. Candidates must be of British nationality and have at least a working knowledge of French. The stipend of the scholarships will ordinarily be within the range of 45,000–90,000 francs a month, according to qualifications and experience, and married men will receive a supplementary allowance (payable in sterling by the Council); the grade appropriate to each individual will be decided by the C.N.R.S. in consultation with the Council. Provision will also be made for travelling expenses to and from the place of work. Forms of application may be obtained from the Secretary, Medical Research Council, 38, Old Queen Street, London, S.W.1, with whom applications must be lodged by March 31.

British Schools Exploring Society: 1952 Expedition.—Applications are invited for the posts of an honorary physician and an honorary surgeon for the Central Iceland expedition, leaving about July 28 and returning about September 16. The entire cost to each member will be £120, plus about £2 10s. for personal equipment. Applicants should apply as soon as possible to the secretary, British Schools Exploring Society, c/o Royal Empire Society, Northumberland Avenue, W.C.2.

South African Medical Research Fellowship.—Applications may be submitted for the 1952 award of the Eli Lilly medical research fellowship, from practitioners registered in South Africa. The closing date is May 8, and full details may be obtained from the honorary secretary of the selection committee, Capetown Postgraduate Medical Association, P.O. Box 2980, Capetown, South Africa.

John Hunter Commemoration Service.—A service will be held at St. Martin-in-the-Fields at 11 a.m. on Thursday, February 14, in commemoration of the fact that John Hunter's grave was in this church until 1859, when the remains were removed to Westminster Abbey. The discovery of the Hunter coffin was made by Frank Buckland, whose name is also commemorated on the plaque. The service will be taken by the Dean of Westminster. An address will be given by Sir Gordon Gordon-Taylor, the lesson read by Sir Cecil Wakeley, and the unveiling carried out by Sir Henry Dale.

Old Journals.—Readers who would like to help their colleagues abroad can do so by sending their used *British Medical Journals* and other medical periodicals to the Mailing Department of the British Council (65, Davies Street, London, W.1). They should be marked "For Overseas Distribution," and will then be sent to those countries most in need of up-to-date medical literature. A number of free copies of various journals are being sent to libraries in Yugoslavia and elsewhere, but many more are needed.

Help in Establishing New Libraries.—The Department of Scientific and Industrial Research has recently helped the Association of Special Libraries and Information Bureaux to establish a consultant information service. This service, drawing upon the existing resources of Aslib, and backed by new research into information techniques, is now available to advise those who are considering the establishment of special libraries and information services in industry and research establishments, and to assist the development of existing services. Details of this service and other facilities can be obtained from the Director, Aslib, 4, Palace Gate, London, W.8.

Search for Silvester.—During the last few years several exhaustive but unsuccessful searches have been made for a portrait of Henry Robert Silvester (1828–1908), who first described his method of artificial respiration in the *Journal* in 1858. We should be glad to hear from any reader who may have knowledge of the existence of such a portrait.

British Association of Otolaryngologists.—At the annual general meeting of the British Association of Otolaryngologists held on December 7, 1951, the following were elected officers for 1951–2: *President*, Mr. V. E. Negus; *Vice-president*, Mr. F. C. W. Capps; *Honorary Secretary*, Mr. Myles L. Formby; *Honorary Treasurer*, Mr. W. A. Mill.

Medical Research Council.—The Earl of Limerick has been appointed a member of the Medical Research Council and will be its chairman, in succession to the late Viscount Addison.

Order of St. John of Jerusalem.—The name of Dr. J. Main Russell, who has been promoted to Officer (Brother) in the Venerable Order of the Hospital of St. John of Jerusalem, was omitted from the list of promotions in, and appointments to, the Order published in the *Journal* (January 19, p. 160).

Scottish Western Region Association of Psychiatrists.—At a general meeting of the association on November 16, 1951, the following office-bearers were elected for the year 1951–2: chairman, Professor T. Ferguson Rodger; vice-chairman, Dr. W. Mayer-Gross; secretary, Dr. J. F. McHarg (Glasgow Royal Mental Hospital); treasurer, Dr. J. Milne. All sections of psychiatry in the region have representatives on the committee.

Fine Arts at the Ministry of Health.—The 21st annual exhibition of the work of the Ministry of Health Art Club and Camera Club was opened at 23, Savile Row, W.1, on January 21 by the Minister of Health. About 30 exhibitors are showing over 40 oil paintings, the same number of water colours, pastels, and etchings, and some sculpture, as well as some beautiful photographs. The artists have mostly chosen landscapes as their subject, and there is a notable absence of abstract work or of "modern art." The standard is high, often comparable with the Royal Academy's summer show.

Emergency Bed Service: Applications and Admissions.—During the seven days ending January 21 the number of applications made by doctors to the London Emergency Bed Service for admission of patients was 1,061, of whom 83.12% were admitted. A white warning, indicating that the percentage of admissions fell to 82½, was issued on January 18 and cancelled on January 22.

COMING EVENTS

Hunterian Society.—The annual dinner will be held at the Savoy Hotel, Strand, W.C.2 (Embankment entrance), on Thursday, February 14, at 7 for 7.30 p.m. The price of the dinner is 30s. Acceptances and cheques should be sent to Mr. Alec W. Badenoch, 110, Harley Street, W.1, before February 11. If Fellows will state with whom they would like to sit, every effort will be made to meet their wishes.

Films in Teaching.—A combined meeting of the Royal Society of Medicine and the Scientific Film Association on "Recent Research on the Effectiveness of Films in Teaching" will be held at the Royal Society of Medicine, 1, Wimpole Street, W.1, at 8 p.m. on Friday, February 29. The opening speakers will be Professor Patrick Meredith, Dr. H. Ellis Lewis, and Mr. John Maddison.

Medical Artists' Association.—Drawings for the examination for membership should reach the chairman of the board of examiners, c/o Dr. Tompsett, Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2, not later than Thursday, February 28. Application forms will be sent on request by Miss Mary Hawker, Snowdrop Cottage, Slut's Lane, Lindfield, near Haywards Heath, Sussex.

Tuberculosis Educational Institute.—Intensive three-day clinical courses will be held at the following centres during 1952:

Cheshire Joint Sanatorium, Market Drayton, Shropshire, March 19, 20, and 21; May 14, 15, and 16; November 12, 13, and 14.

King George V Hospital for Diseases of the Chest, Godalming, Surrey, February 27, 28, and 29; June 4, 5, and 6; October 1, 2, and 3.

Red Cross Sanatoria of Scotland (Tor-na-Dee and Glen o' Dee), March 19, 20, and 21; May 21, 22, and 23; October 15, 16, and 17.

The fee for each course is three guineas, and applications should be sent to the secretary, Tuberculosis Educational Institute, Tavistock House North, Tavistock Square, London, W.C.1.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Monday

GRESHAM COLLEGE, Basinghall Street, London, E.C.—January 28, 5.30 p.m., "*The Physiology of the Brain—Sensations*," first of four lectures by Professor H. Hartridge, F.R.S. (See also January 29, 30, and 31.)

INSTITUTE OF PSYCHIATRY, Maudsley Hospital, Denmark Hill, London, S.E.—January 28, 5.30 p.m., lecture-demonstration for postgraduates by Dr. E. Stengel.

LONDON UNIVERSITY.—At Physiology Theatre, University College, Gower Street, W.C., January 28, 5.30 p.m., "*The Metabolism of Ethyl Alcohol*," Special University Lecture in Pharmacology by Dr. E. Jacobsen (Copenhagen University).

MANCHESTER MEDICAL SOCIETY: SECTION OF GENERAL PRACTICE.—At Physiology Theatre, Medical School, Manchester University, January 28, 9 p.m., "*The Soul of Medicine*," by Dr. G. J. Langley.

MANCHESTER MEDICAL SOCIETY: SECTION OF ODONTOLOGY.—At Lecture Room, Manchester Dental Hospital, January 28, 5 p.m., "*Anatomy for the Clinician*," by Professor R. J. Last.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—January 28, 8.30 p.m., "*Surgery of the Spleen and its Indications*," discussion to be introduced by Sir Lionel Whitby and Mr. Rodney Maingot.

ROYAL EYE HOSPITAL, St. George's Circus, Southwark, London, S.E.—January 28, 5 p.m., "*Ptosis*," by Dr. T. H. Whittington.

UNIVERSITY COLLEGE, Physiology Theatre, Gower Street, London, W.C.—January 28, 5.30 p.m., "*The Metabolism of Ethyl Alcohol*," by Dr. Erik Jacobsen (University of Copenhagen).

Tuesday

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., January 29, 5.30 p.m., "*Carcinogenesis*," by Professor A. Haddow.

GRESHAM COLLEGE, Basinghall Street, London, E.C.—January 29, 5.30 p.m., "*The Physiology of the Brain—Movements*," second of four lectures by Professor H. Hartridge, F.R.S. (See also January 28, 30, and 31.)

●INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—January 29, 5.30 p.m., "*Epithelioma*," by Dr. R. T. Brain.

MANCHESTER MEDICAL SOCIETY.—At Large Anatomy Theatre, Medical School, Manchester University, January 29, 4.30 p.m., "*Animal Electricity*," University Lecture on the History of Medicine by Professor W. Schlapp.

SOCIETY FOR THE STUDY OF ADDICTION.—At The Barnes Hall, Royal Society of Medicine, 1, Wimpole Street, London, W., January 29, 8 p.m., joint meeting with Medico-Legal Society. "*A New Form of Treatment for Delinquent Alcoholics as Applied in Denmark*" (*Illustrated with Cinematograph Film*), by Dr. Erik Jacobsen (Copenhagen). A discussion will follow.

Wednesday

EDINBURGH CLINICAL CLUB.—January 30, 4 p.m., clinical meeting by Miss G. Herzfeld. Visit to Bruntsfield Hospital.

GRESHAM COLLEGE, Basinghall Street, London, E.C.—January 30, 5.30 p.m., "*The Physiology of the Brain—The Special Senses*," third of four lectures by Professor H. Hartridge, F.R.S. (See also January 28, 29, and 31.)

●INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—January 30, 5.30 p.m., "*Mycology—Sporotrichosis: Blastomycosis*," by Dr. R. W. Riddell.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., January 30, 4.30 for 5 p.m., "*Haematuria*," by Mr. A. W. Badenoch.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—At Royal Free Hospital School of Medicine, 8, Hunter Street, Brunswick Square, W.C., January 30, 8.30 p.m., "*Breast Feeding Without Dogma*," by Dr. Charlotte Naish.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow.—January 30, 5 p.m., "*The Treatment of the Typhus Fevers and Typhoid Fever with the Newer Antibiotics*," Dr. John Burns Lecture by Dr. Raymond Lewthwaite.

Thursday

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., January 31, 5.30 p.m., "*The Physiological Basis of Visual Sensation*," by Dr. L. C. Thomson.

EPSOM AND SUTTON INTER-HOSPITAL PSYCHIATRIC ASSOCIATION.—At Horton Hospital, Epsom, January 31, 5.30 p.m., clinical meeting. "*Some Problems in the Treatment of Neurosyphilis with Penicillin*," by Dr. M. Wheelen; "*The Life Cycle of the Malaria Parasite*," film to be introduced by Mr. P. G. Shute; demonstration of cases by members of medical staff of Horton Hospital.

GLASGOW UNIVERSITY MEDICO-CHIRURGICAL SOCIETY, The Union, University Avenue, Glasgow.—January 31, 7.30 p.m., "*The Science and Art of Cardiology*," by Professor I. G. W. Hill.

GRESHAM COLLEGE, Basinghall Street, London, E.C.—January 31, 5.30 p.m., "*The Physiology of the Brain—The Higher Functions of the Brain*," last of four lectures by Professor H. Hartridge, F.R.S. (See also January 28, 29, and 30.)

●INSTITUTE OF CHILD HEALTH, Hospital for Sick Children, Great Ormond Street, London, W.C.—January 31, 5 p.m., "*Surgery in the Newborn*," by Mr. Denis Browne.

●INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—January 31, 5.30 p.m., "*Histopathology—Epithelioma*," by Dr. J. O. Oliver.

LONDON UNIVERSITY—At Meyerstein Lecture Theatre, Westminster Medical School, Horseferry Road, S.W., January 31, 5.30 p.m., "*The Physiopathology of Glucose Excretion by the Human Kidney*," Special University Lecture in Medicine by Dr. P. Govaerts (Brussels University).

MIDDLESEX COUNTY MEDICAL SOCIETY.—At Central Middlesex Hospital, Park Royal, London, N.W., January 31, general meeting. 3 p.m., Demonstration of clinical cases, pathological specimens, and *x*-rays; 4.20 p.m., "*Errors in Blood Transfusion—Does Science Pay?*" by Dr. George Discombe; 4.45 p.m., "*Hoarseness*," short paper followed by a film "*Oesophageal Speech*," by Mr. Maxwell Ellis.

ROYAL ARMY MEDICAL COLLEGE.—At Lecture Theatre, John Islip Street, London, S.W., January 31, 5 p.m., "*Modern Trends in the Treatment of Carcinoma of the Breast*," by Sir Cecil Wakeley, P.R.C.S.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—January 31, 5.30 p.m., "*Problems of the Radiation Treatment of Cancer of the Larynx*," Otolaryngology Lecture by Dr. M. Lederman.

ROYAL INSTITUTION, 21, Albemarle Street, London, W.—January 31, 5.15 p.m., "*Respiratory Pigments*," by Professor H. Munro Fox, F.R.S.

ROYAL SOCIETY, Burlington House, Piccadilly, London, W.—January 31, 2.30 p.m., "*The Thermodynamics of Elasticity in Biological Tissues*," discussion to be opened by Professor A. V. Hill, F.R.S.

ST. ANDREWS UNIVERSITY.—At Lecture Theatre, Materia Medica Department, Medical School, Small's Wynd, Dundee, January 31, 5 p.m., "*Disabled Youth*," by Professor T. Ferguson, D.Sc.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—January 31, 4.30 p.m., lecture-demonstration in psychiatry by Sir Paul Mallinson.

UNIVERSITY COLLEGE, Physiology Theatre, Gower Street, London, W.C.—January 31, 5.30 p.m., "*Different Forms of Signalling Employed by the Nervous System*," by Professor Bernhard Katz.

WYE COLLEGE, Swanley Hall, near Ashford, Kent.—January 31, 8.15 p.m., "*The Coming of Genetics*," by C. D. Darlington, D.Sc., F.R.S.

Friday

●INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—February 1, 5.30 p.m., "*Epithelioma and Epithelial Tumours*," clinical demonstration by Dr. R. T. Brain.

●INSTITUTE OF DISEASES OF THE CHEST AND INSTITUTE OF CARDIOLOGY.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., February 1, 5.30 p.m., "*Medical Aspects of Cyanotic Congenital Heart Disease*," by Dr. Wallace Brigden.

OXFORD UNIVERSITY.—At Magdalen College, Oxford, February 1, 5 p.m., "*The Neurophysiological Basis of Mind*," Waynflete Lecture by Professor J. C. Eccles, F.R.S.

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh.—February 1, 8 p.m., "*Problem of the Mechanism of Learning*," by Professor J. Z. Young, F.R.S.

WHIPPS CROSS HOSPITAL MEDICAL SOCIETY.—At Nurses' Lecture Theatre, February 1, 8.30 p.m., "*Coronary Heart Disease in Doctors (Results of a Recent Investigation)*," by Dr. J. N. Morris.

Saturday

BRITISH ASSOCIATION OF ALLERGISTS.—At Royal Society of Medicine, 1, Wimpole Street, London, W., February 2, annual general meeting. Morning session: 10.30 a.m., "*Histopathology of Rhinitis*," by Dr. H. A. Lucas; 11 a.m., "*Factors Implicated in the Production of Tissue and General Eosinophilia*," by Dr. J. Pepys; 11.30 a.m., "*Allergy and A.C.T.H.*," by Professor G. W. Pickering; 12 noon, discussion. Afternoon session: 2.30 p.m., "*The Basis of Antihistamine Therapy*," by Dr. B. Halpern; 3.15 p.m., "*The Present Place of Antihistamine Therapy in Clinical Practice*," by Dr. C. J. C. Britton; 4.45 p.m., business meeting.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Evans.—On January 14, 1952, at New Cross, London, S.E., to Alexa (formerly Mitchell), M.R.C.S., L.R.C.P., wife of Dr. C. J. Evans, a daughter—Mary.

Tweedie.—On January 10 1952, at Tripoli, Lebanon, to Gay, wife of G. C. Tweedie, M.B., F.R.C.S.Ed., a son—Thomas Cunningham.

DEATHS

Gaskell.—On January 12, 1952, at Greenwood, Fareham, Hants. Sir Arthur Gaskell K.C.B., O.B.E., F.R.C.S., D.P.H., Surgeon Vice-Admiral, R.N., retired, aged 80.

Mackinnon.—On January 12, 1952, at Craig-a-Charran, Portree, Skye, William Donald Mackinnon, M.B., Ch.B., D.P.H.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Vitamins during Lactation

Q.—*Do breast-fed infants get enough vitamins A and D in their mothers' milk? If so, does the amount of the vitamins in the milk vary according to the mother's vitamin level? Do the cod-liver oil tablets which mothers take protect them from vitamin depletion, or do they merely provide a surplus which can "spill" over into their milk?*

A.—Breast-fed infants receive adequate vitamin A in their mothers' milk, but only marginal amounts of vitamin D. Under favourable circumstances the vitamin-D supplies are supplemented by direct exposure to sunlight. The amounts of the vitamins in breast milk do not vary much unless very massive doses are given to the mother. The cod-liver oil tablets protect the mothers from depletion in so far as they restore the heavy drain of vitamins which must be taken from their reserves.

Instruments in Spirit

Q.—*Is there any way of treating surgical spirit, after it has been used for storing instruments and syringes in the surgery, so that it may be used again?*

A.—The only really satisfactory method of purifying spirit is by distillation, but this is forbidden (except under licence) by the Methylated Spirits Regulations.

Traces of water can be removed from undiluted spirit by allowing it to stand over dry quick-lime (calcium oxide) or by adding potassium carbonate and decanting the clear supernatant fluid. The usual formulae for surgical spirit, however, contain castor oil, diethyl phthalate, and either naphtha or methyl salicylate in industrial methylated spirits. These substances may prevent a clear solution from being obtained by the above method. Also the most effective bactericidal strength of alcohol is 70 to 75%.

The Medical Research Council's *Memorandum No. 15* (H.M.S.O.) on "The Sterilization, Use, and Care of Syringes" approves of the use of alcohol for sterilizing syringes only when heat methods are not available. A technique is described using 70 to 75% alcohol. With instruments, again the best method is by heat, and this is recommended by the M.R.C. *Memorandum No. 11* (H.M.S.O.) on "The Control of Cross-Infection in Hospitals."

Strained Eyes

Q.—*Is it possible through reading with a bad light, using ill-fitting spectacles, etc., to damage one's eyes, in the sense of producing permanent changes needing correction with lenses? The necessity for wearing spectacles is often ascribed by the laity to unwise "straining" of the eyes, particularly when young. Is there anything in this?*

A.—The misuse of the eyes from working in bad light, wearing ill-fitting spectacles, and lenses not properly centred, etc., may have both general and local results. Headaches, loss of power of concentration—leading in children to bad school reports—mental fatigue, irritability, and mild indigestion may all be caused by eye-strain. Locally, ciliary spasm and local congestion and lenticular astigmatism may also be caused. These conditions are relieved by treatment, teaching of good ocular habits, and the proper adjustment of the correcting glasses. Apart from ciliary spasm and local congestion, which may be recalcitrant, the other conditions are not permanent.

Herpes Gestationis

Q.—*I have this week seen a case of herpes gestationis. History: First pregnancy—appearance of typical rash at fourth month; despite treatment crops of vesicles persisted to the end of the pregnancy and then cleared up spontaneously. Second pregnancy—as above. Third pregnancy, now five months gone—herpes appeared at fourth month and is running the usual course. (1) Will you please suggest treatment? She did not have serum last time; would you recommend this, as everything else was tried without success? (2) What is the explanation of this syndrome?*

A.—Herpes gestationis is distinguished from other cases of dermatitis herpetiformis only by the fact that it occurs during pregnancy. The cause of dermatitis herpetiformis is unknown, and the virus theory of its origin is as yet unproved. It is not known why pregnancy should have this influence in some cases.

It is very doubtful whether serum or autohaemotherapy really affects the disease, and the treatment of the pregnant patient should be the same as for dermatitis herpetiformis in general. Most cases will eventually yield to the administration of arsenic or sulphapyridine, and it would be as well in this case to make sure that adequate dosage was given before the treatment was abandoned. Local treatment is purely symptomatic, for the relief of irritation and the prevention of secondary sepsis.

Carbon Dioxide Slush

Q.—*How is carbon dioxide acetone slush prepared? How is it used in the treatment of naevi?*

A.—For the preparation of carbon dioxide slush, acetone and carbon dioxide snow are required. The latter is most conveniently made in the consulting-room with a "Sparklet" apparatus; the carbon dioxide ice used in a refrigerating plant is not satisfactory. The powdered snow is placed in a gallipot and a few drops of acetone added. The mixture is stirred with a glass or wooden rod so as to make slush of suitable consistence. It is then best applied to the skin with a camel-hair brush or a thin wisp of cotton-wool.

Carbon dioxide slush has its chief use in the treatment of superficial haemangiomas. It is easier to apply to a large or irregularly shaped area than solid carbon dioxide, but it has a more superficial effect because pressure cannot be applied as it can with a pencil of snow. Most of the haemangiomas which respond to carbon dioxide freezing extend to a moderate depth and are better treated with solid snow. On the other hand, the more superficial lesions are less responsive to treatment, so that slush has a rather limited use.

Fluorescent Lighting

Q.—*In an engineer's drawing-office the draughtsmen require a very good light. Is there any medical reason why a fluorescent lamp should not be brought down from the ceiling to within a couple of feet (60 cm.) of the table?*

A.—There is no medical reason why a fluorescent lamp should not be mounted as low as 2 ft. above a draughtsman's table, provided the draughtsman cannot ordinarily see the lamp itself and so be subjected to glare. Many of these lamps are used as low as this for illuminating bench work in factories, but they are fitted with trough reflectors which allow the light to reach the working area but screen the bright lamps from the workers' view.

Post-herpetic Neuralgia

Q.—*What is the best treatment of post-herpetic neuralgia (T 6 on the left side)? I have a case in which there has been no response to analgesics, aneurin, mixed vitamin-B preparations, short-wave diathermy, or deep x-ray.*

A.—Treatment of established post-herpetic neuralgia, especially in an elderly patient, is frequently unrewarding. There are usually two elements in the condition: paraesthesiae consisting of numbness, tingling, sensations of "crawling," etc., which are a constant source of discomfort rather than a major disability and which do not generally respond to any form of treatment; the second element of severe pain is on the whole less common, and when present may be intractable to treatment but occasionally is relieved by a posterior rhizotomy of several roots or antero-lateral chordotomy.

NOTES AND COMMENTS

Gadgets for the Armless.—ANOTHER EXPERT writes: I have a simpler gadget for holding a telephone to the ear which your questioner ("Any Questions?" December 8, 1951, p. 1413) may find useful. It is made from a slab of hard rubber 2 cm. thick and measures 8 cm. across its longest diameter. The accompanying photograph shows its shape. It fits on to the handle of the

telephone, which rests comfortably on the shoulder against the ear and near the mouth. Not only the armless may find this useful. Personally, I find two hands are not enough, and with this gadget, after a little practice, two hands are left free for writing, etc. Provided it is placed about the middle of the handle of the telephone, it is comfortable to use, and at the same time does not affect the position of the receiver on its stand.

Correction.—An unfortunate error occurred in our report (January 12, p. 102) of the contribution by Dr. D. K. Briggs (American Hospital of Paris, Neuilly-sur-Seine) to the meeting of the General Practice Section of the Royal Society of Medicine, held on December 19. Lines 3 and 4 of the report of his remarks (p. 103) should read: ". . . treatment was determined on considerations less purely scientific than those obtaining in research centres."

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